1137 They have sold the new small canoes, tree bark mats
[501] (damajaguas), palm-leaf fans, rubber and rolls of liana (these are
285 used in the construction of bamboo huts to tie up the palm-leaves
283] on the [284] roofs and for some other purposes in lieu of string),
which they have brought from the villages and with the cash they
have earned they now make their small purchases. They have
few wants and do not need much: a few feet of cotton cloth, a
chopping knife, some salt, a small mirror, glass beads, fish hooks,
[411] powder and small shot for the old muzzle-loader which a few of
them may own. This would be all their heart desires. It is little,
even very little, and yet it takes long, even very long, until they
have made their choice and finally decided to buy. First they
talk it over among themselves in their guttural and sónorous lan-
guage and then they start bargaining, and then they count out their
money slowly and cautiously; finally having managed to get the
[462] desired goods, they packed them into the nearly full basket car-
ried by the wife. The women and girls timidly hide behind their
576 menfolk. When spoken to, they do not answer, although they
571 understand sufficient Spanish. Their jealous menfolk have strictly
[191] forbidden them to enter into conversation with men of other races
or tribes. They draw back bashfully. But if the husband is not
present, only the mother or brother, the women become very
loquacious, especially when their tongue has been untied by a
small present—a mirror, necklace or something of the kind. And
they are happy beyond words if you caress their little child, who
looks like a Japanese baby painted brown, and has a friendly smile
even for a stranger. It is amusing to watch the women meeting a
fashionably dressed lady in one of the shops; then they surround
her laughing, amazed and admiring, but they do not appear to be
jealous of the lace dresses worn by European women. The men,
on the other hand, do not honor even the most beautiful and most
elegant white lady with so much as a glance.

142 The Cayapa girls are pretty from the age of 12 to 16 years,
302 their bodies somewhat plump, but still with a beautiful shape.
584 Sometimes young men and women can be seen with red and black
streaks and dots on their faces, chest, arms and legs; this is a
sign that they are engaged.

505 Once their business in town is finished they prepare for the re-
turn journey to their villages. "Adios compadre, adios compadres,"
and chattering and laughing, happy and content, they hurry to
the shore where their canoes are moored. On their way they

291 Children wear no clothes at all until they are 6 or 8.

301 The hair is worn loose, long, and flowing by the women but is clipped
302 above the ears by the men. Both sexes wear necklaces and wristbands of glass and porcelain beads, coins, seeds, and beetle wings. Only women wear earrings.

302 The traditional *Chibcha* custom of frequently painting body and face is found among the *Cayapa*. Red, yellow, and black are used, and the designs are very numerous. Barrett reproduces many of the motifs and insists that there is no special significance attached to any of them, nor is there any age, sex, or property correlation.

TRANSPORTATION

501 **Watercraft.**—A large part of every *Cayapa's* life is spent on the water fishing and traveling. Canoes are built with great skill and care. They
[439] can withstand not only fluvial but also maritime travel and are routinely sold in the "civilized" coast towns. They are dugouts, usually 10 to 12 yards long but sometimes much larger. Balsa-wood logs are sometimes used as outriggers.

MANUFACTURES

000 Details of *Cayapa* manufactures are contained in Barrett's work, which describes and illustrates finished products and minutely discusses the techniques of preparation.

322 **Woodworking.**—Woodworking includes house building, making deadfall traps, and carving seats and children's dolls.

285 **Weaving and basketry.**—The women weave cotton cloth on a narrow
286 native loom, and the men do the sewing. The men also weave the fishing
462 nets and hammocks. Barrett's discussion of *Cayapa* basketry is outstanding. The *Cayapa* make many kinds of baskets, mats, and fans of bark and of various roots.

323 **Pottery.**—Pottery is crude and undecorated. It is used particularly for
177 storage. Tradition claims that in their old Highland habitat the *Cayapa* made better pottery but that calabashes have since largely replaced ceramics.

324 **Stonework and metalwork.**—Stonework is limited to the metates
325 used in grinding corn and plantains. Although in aboriginal times Lowland Ecuador was a famous area of metallurgy, there is no evidence that the contemporary *Cayapa* practiced it.

411 **Weapons.**—The weapon most widely used today is the muzzle-loading
177 shotgun. The blowgun was important in the past, but today its use is restricted to boys, who shoot poison darts while playing at hunting. Hardwood lances are being given up, and the bow and arrow is said ~~not~~ to be mentioned in *Cayapa* tradition. The steel machete is ubiquitous.

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

137 rule the various species of trees are associated in a strictly heterogeneous manner, and in all cases there is a fairly dense undergrowth, besides vines and aerial roots in abundance. These latter hang from the trees in such profusion as alone to make it necessary to cut a trail in proceeding even for a short distance by land.

824 137 Of these aerial roots the one known by the local Spanish term *pitigua* deserves special mention. It is very strong and durable, is little affected by climate, [342] and is not attacked by insects. It is, therefore, extensively employed in binding joints in house-building, and indeed wherever a good binding material is needed. [285] It is also extensively used in making certain kinds of basketry.

This general mention of the natural vegetal resources of the Cayapa region will suffice for present consideration, but the separate plants and their particular uses will be treated in detail in the following pages in connection with matters with which they are particularly concerned.

The heterogeneity of the flora of the region, above referred to, is fortunate for its inhabitants, since it places nearly every kind of plant, on which so much of the culture of the Cayapa Indians depends, within comparatively easy reach of all. That the flora should be so varied in any given locality, and that any given species should be so generally distributed, is due to the almost identical climate, soil, and other environmental conditions throughout the region.

The following is a list of the principal vegetal resources, both indigenous and introduced, employed by the Cayapa:

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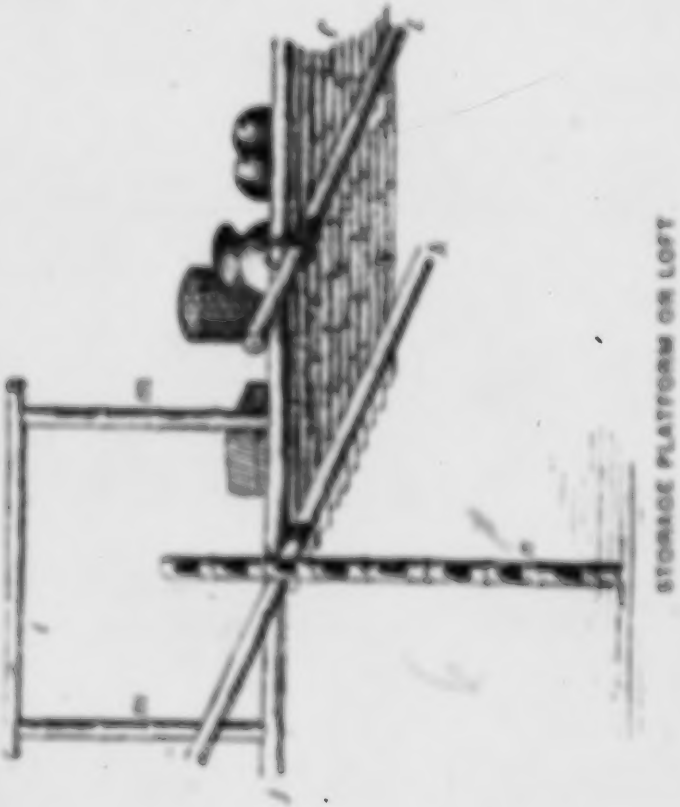

STORAGE PLATFORM OR LOFT

3: Barrett E-5 (1908-1909)1925
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CANOE PILOTED BY A MAN
[p. 150(c)]

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

designs is shown in pl. LXXXVI. This decoration is accomplished by cutting with the point of a machete or a knife while the calabash is green, and results, when the utensil is dried, in a white linear figure on a brown background, since it is only the thin outer skin of the calabash that turns brown in the curing. After several days of curing in the open, excepting during rain, the calabash vessel is ready for use. It is rarely put into service immediately, however, since a considerable supply of these utensils is always kept on hand; more frequently it is stored away to season thoroughly and become more durable. A small cross-stick attached to a piece of pitigua cord is inserted in the opening of a globose water-calabash, which is then suspended from a rafter of the house to season. Ordinarily several of these calabashes are thus hung in a cluster. The opening is always plugged with a piece of hoja blanca, or of the leaf ûʹtya hakĭ, used in cooking, in order to protect the calabashes from the ravages of cockroaches.

A second type of calabash utensil, called in Spanish mate and in Cayapa cuʹlya, is usually hemispherical and is made ordinarily of the globose form of fruit. Now and then, however, an ellipsoidal calabash is used for this purpose, in which case the mate is elliptical in horizontal cross-section. Fig. 13 exhibits a hemispherical mate resting on a typical woven ring, made to keep it in an upright position, especially when used to serve liquid at feasts. About the rim and on the sides of the mate are shown incised decorations. By cutting the fruit exactly in two, through the stem, a single calabash of

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

415 [442] course provides two mates. The cutting is almost always done with an old machete, the edge of which is serrated by striking it with another machete at intervals of about an eighth of an inch. With this crude saw the shell of the calabash is carefully cut along a line marked usually by a string tied tightly around it. The removal

•[285 531]

FIG. 18.—Calabash vessel and woven ring

of the pulp is in this case a simple matter. It is first scooped out in large pieces with the point of a machete or a knife, and then, when the inner surface of the shell is reached, it is scraped carefully and smoothly with a small, smooth-edged clam-shell. The drying also is a more simple process than in the case of the water-calabash, since the inner surface is more exposed to the air.

When dry, the mate is used for a multitude of purposes, such as dipping liquids, serving foods, and so on. If permitted to lie for a long time in any liquid, the cala-

3: Barrett E-5 (1908-1909)1925
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BASKETRY

285 Cayapa basketry may be classified according to the materials from which it is made, its technic, and its forms and uses.

Classification according to materials is recognized by the Cayapa themselves, as is shown by the following terms:

MATERIALS

285 Pitigua = te'tcûa (the root of an aerophitic plant); te'tcûm pickalyí = basket made of te'tcûa.

824 Rampile = pi'tcûa (a species of palm); pi'tcûm pickalyí = basket made of rampile.

Hoja blanca = fi'ba hakí; fi'bañ pickalyí = basket made of hoja blanca.

Hoja negra = e'lûñ hakí; e'lûñ pickalyí = basket made of hoja negra.

Chocolatilla = tcûköla'te; tcûköla'te pickalyí = basket made of chocolatilla.

Crinande = viñga'tcí; viñga' pickalyí = basket made of crinande.

Hoja de chapil = kûla'hakí; dic-pûnûntsû'mí; kûla' pickalyí, kûla'pô pickalyí = basket made of hoja de chapil.

The word picka'lyí, which strictly signifies any kind of basket other than the burden-basket or the hamper-shape basket, is here used as a general term meaning baskets of all kinds. All considerations of technic, form, and use are omitted in the above classification, material only being taken into account.

The basket materials used by the Cayapa may be divided into three classes. First, the heavy strips or splints of the inner fibers of the aerial root called pitigua, used for making the more durable baskets such as those shown in pl. XCII, 1, 3, 4, 6–8, and in pl. XCIII, 1, 3, 4, 12.

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

In the second class of material may be included the thin bark of five species of endogenous plants: rampile, hoja blanca, hoja negra, chocolatilla, and crinande, which are used for making the lighter and less durable baskets, especially the hamper-shape baskets such as those shown in pl. XCIII, 2, 5, 6, 10, 11, as well as diminutive trinket baskets like those in figs. 15–17 (pp. 200-201). These materials, especially rampile, are used also in making baskets of other forms, but requiring no great durability or strength. Baskets of this class are shown in figs. 7–9 of pl. XCIII. Rampile is also extensively employed in making fans and mats. In the third class of materials is the leaf of the palm known in Spanish as chapil, sometimes also called milpeso, and, by the Cayapa, kûla'pō. Two forms of basket, one conical, the other square-sided (pl. XCII, 2, 5 respectively), are made of this material. Such baskets are suitable only for temporary use, since after a day or two the material becomes dry and brittle; while green, however, it is pliable and fairly strong. The conical basket (fig. 2) serves a ceremonial as well as a utilitarian purpose, being employed by shamans in their medicine practices.

The most important of the various basketry materials is the pitigua. This durable fiber is derived from the long roots of a single species of aerophitic plant which usually grows in the upper branches of trees and sends its long, slender roots to the ground. Pitigua is much sought for various purposes by the negroes and whites of the region, as well as by the Indians, so that along the lower course of the Rio Cayapas it has become somewhat scarce. When the plant is found, however, its roots are

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

easily gathered, since by simply pulling on them they usually break off at or near the plant itself, and often a root seventy-five or even a hundred feet in length is obtained. It is employed not only for basket-making but for many other purposes, such as for binding together the parts of a house-frame (figs. 2–5), for binding the palm-leaf thatch upon the roof (pl. VII), and indeed wherever material for tying or binding is needed. It serves also the many purposes for which civilized people use string and rope, as for mooring canoes, securing animals, etc. Pitigua fiber is practically indestructible so far as dampness is concerned, and may even be kept wet for a considerable time without rotting. If kept from direct contact with water, however, it will last for years even in this humid climate, as is shown by the bindings on the frames of some of the Cayapa houses that have been in use for ten or fifteen years at least.

When gathered these roots are usually made up into large coils (pl. XCI, 4) and laid away in a dry place until needed. To render them pliable they are soaked over night in the river. In two forms of baskets the warp elements are made of the smaller whole roots of the pitigua, otherwise the material is always split into strips or splints, which are prepared as follows:

The bark of the root being first removed, its inner woody portion is split into long, thin ribbons. The individual fibers of the root are extremely long and straight, hence when once started a ribbon can be split the full length of the root with almost perfect evenness. Usually one end of the root is taken up and split with a knife or machete, for a distance of an inch or two, into

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

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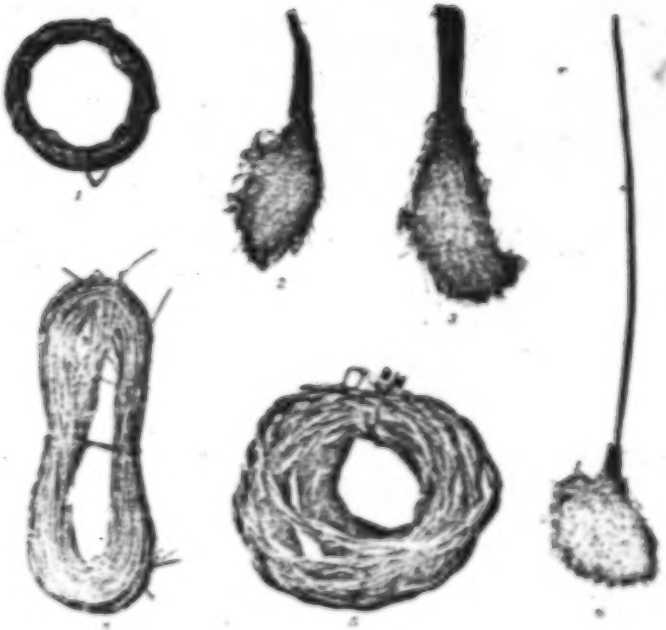

ROPE COILS AND BRUSHES

[p. 186 (A)]

3: Barrett E-5 (1908-1909) 1925
SD 6 Cayapa SD6

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BASKETS OF PITIGUA AND CHAPIL

[p. 186(R)]

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

as many strips as it will yield. This split end is then grasped with the left hand at a point five or six inches from the cuts described, and is bent with the right hand down over the thumb of the left, or in the opposite direction over the fingers (fig. 14). This tension on the fibers causes them to cleave uniformly along the planes started by the preliminary splitting. A new hold is then taken farther down and the bending repeated, which results in the splitting of another section. In this manner it is possible to split rapidly a long root throughout its length. A root will sometimes yield as many as half a dozen strips suitable for basket-making. Before these are used, however, any rough or uneven places, due to chance cleavage of the fibers along these planes, are removed by scraping and sizing.

FIG. 14.—Splitting pitiqua for basketry

The scraping is done by holding vertically to the ribbon a knife or other sharp-edged instrument while the ribbon is drawn over the edge of the heel or across the side of the knee. Obviously the width of such strips varies according to the part of the root from which they come. On the other hand, the root differs so slightly in diameter throughout that the variation in the width of a strip is very slight. For the finer basketry all splints are

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

285 trimmed to approximately equal widths, but for ordinary baskets this is not deemed necessary.

222 285 824 In case the pitigua root is not available, there are other parasitic plants which send aerial roots to the ground that may be used for temporary baskets.

Of the less durable and lighter materials used for making hamper-shape baskets, the most important is rampile, which comes from the bark of the petiole of a fan-leaf palm which produces thin strips from one-eighth to one-half inch in width and from three to twelve feet in length. In splitting off this bark, the circumference of the end of the stem is cut with a sharp instrument into as many segments as the desired width of the strips demands. Usually the strips on several stems are started at one time and then the bark of each is split off by pulling with the fingers one strip after another. In splitting the bark in this manner, a certain amount of the inner succulent fiber of the stem is taken with it. To remove this a number of strips, perhaps twenty, are grasped between the great and second toe in such manner that one end of the bunch of strips reaches almost to the body. Thus held, the strips are taken in turn and the succulent portions cut transversely at a point a couple of inches from the end. The strips are now taken rapidly one by one and the bark is peeled from the succulent fibers. It remains only to size the strips, that is, to bring them to an even width. This is done by splitting, since in this material, as in the pitigua, the fibers are long and straight, so that when once started they part evenly the full length of the strip. It is rarely necessary to do any special cutting and trimming to make these strips of proper widths.

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

The material of this class next in importance to the rampile is that obtained from the petiole of the hoja blanca, called by the Cayapa fī'ba hakī, signifying, as does the Spanish term, "white leaf." This plant has a long pinnate leaf somewhat similar to that of the banana, but with a long, round, slender, and fairly hard petiole. It derives its name from the fact that the under-surface of the leaf-blade has a thick coating of white bloom. The strips of this material used in basket-making are obtained from the petiole of the leaf in the same manner as are those of the rampile, except that before splitting off the bark it is scraped. This removes a thin, succulent outer coat of light-green, and leaves the inner creamy-white bark which is hard and tough, though very thin. This hoja blanca bark is used chiefly for making small hamper-shape baskets (figs. 15–17) used as receptacles for trinkets, though it is frequently employed in making fans, especially the finer ones. It is much less durable than is the rampile, and for that reason, as also on account of its thinness, it is not adapted to the manufacture of large hampers or of mats.

The blades of the leaves of hoja blanca find a variety of uses, chief among which is as a covering for cargoes of canoes to protect them against rain. The leaves are much tougher than are those of most plants of a similar kind in this region and shed water perfectly. They are used even for repairing leaks in house-thatch, though they are never employed for entirely thatching a permanent building.

Hoja blanca is the only basket material which is ever artificially colored. The strips are stained with red

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

285 386 achote, the plant which produces the red face-paint used by the Cayapa. This coloring matter is rubbed on the stem after it has been scraped down to the hard white layer of the bark and before the bark is stripped from the stem. The colored strips are used occasionally as a means of producing the geometric designs used in small hamper-shape baskets and in fans.

285 824 Three other plants with a habit of growth similar to that of the hoja blanca occasionally furnish materials for the hamper-shape baskets. They are the chocolatilla, called by the Cayapa tcōkōla'te, which yields a brown material; the hoja negra, called e'lūñ haki; and the crinande, called viñga'tci. The material in each of these plants comes from the petioles of the leaves. They are obtained and manipulated in the same manner as is that derived from the hoja blanca. None of the three, however, is ever colored.

285 482 [222] As above mentioned, the leaf of a large species of palm, called in Spanish chapil, is used on rare occasions for basket-making. Should a person be out hunting, or for any other reason be at a considerable distance from his house and unexpectedly find some fruit or other commodity which he cares to take home, he may, by securing a couple of the large leaves of the chapil, quickly fashion a temporary burden-basket, such as either of those shown in pl. XCII, 2, 5, in which to carry them. Such a basket is never kept for further use, for as soon as the leaves become dry they are very brittle and entirely worthless.

3: Barrett E-5 (1908-1909)1925
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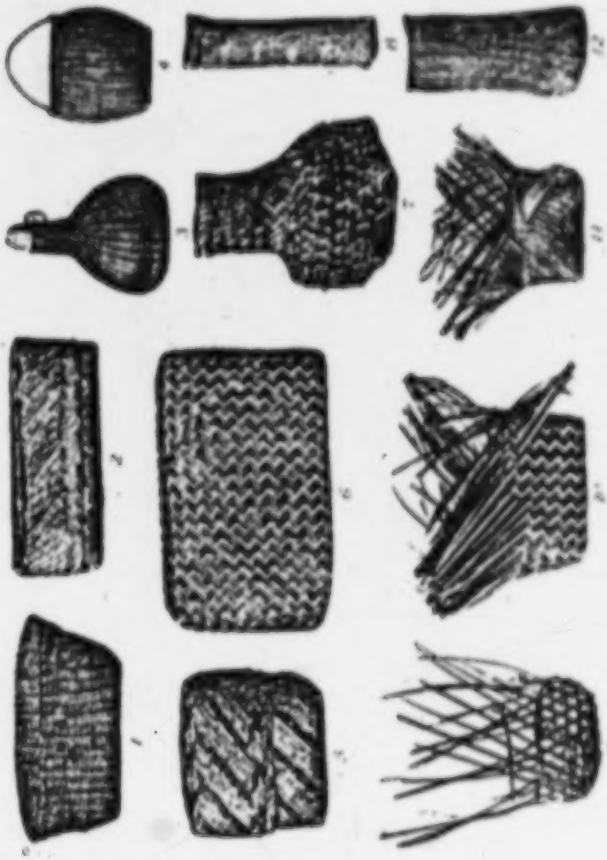

LIGHT BASKETS

BARRETT—CAYAPA INDIANS

[p. 190(N)]

3: Barrett E-5 (1908-1909)1925
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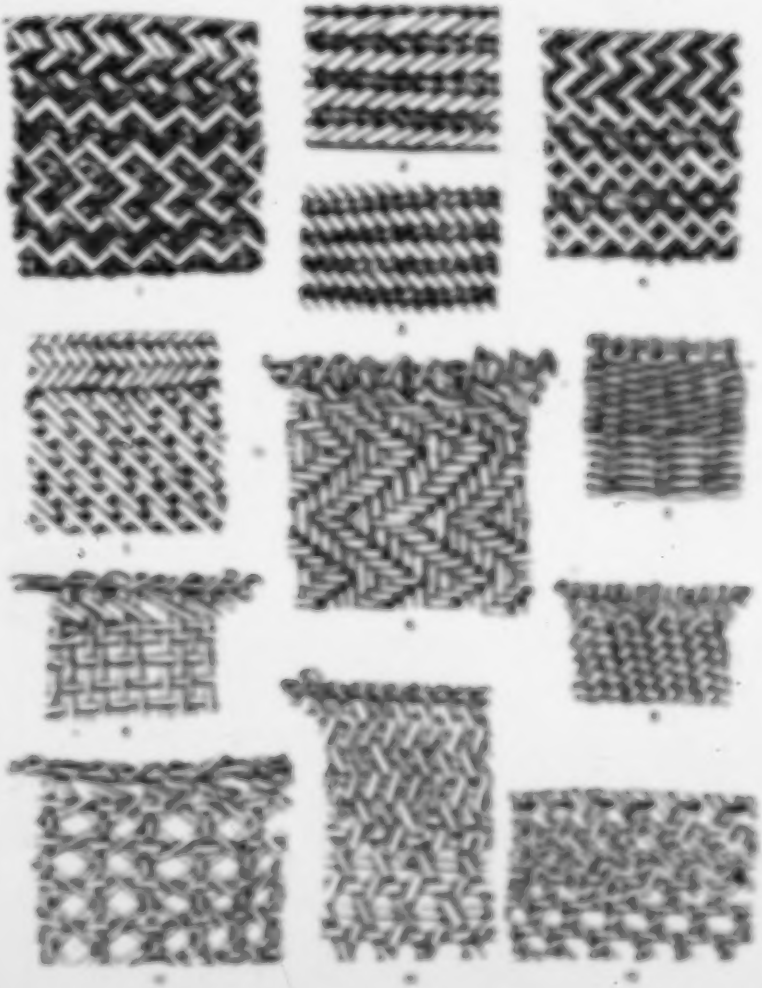

BASKETRY TECHNIQUE

[p. 190(a)]

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

TECHNIC

From the standpoint of technic, Cayapa basketry may be divided into three general classes according to the number of elements used in the construction, as follows: 295

Two-element work:
Wickerwork—kitte'ka (pl. XCIII, 4, 7; XCIV, 1, 3, 4, 12; XCV, 7; XCV, 1, 2, 5).
Twilling—kapé'a, yé'i or ya'iyi (pl. XCIII, 1, 5, 6, 8, 10, 11; XCIV, 1–6; XCV, 3, 7).

Three-element work:
ka'pá (pl. XCIV, 6, 8, 12).
tcí'nde (pl. XCIV, 11; XCV, 4, 6, 10, 12–14).
dó (pl. XCV, 6, 10).

Four-element work:
ka'ndilao (pl. XCII, 3; XCIV, 10; XCV, 9, 11).

In addition to these technics, which may be considered the regular Cayapa basketry technics, there are two others used in the two types of palm-leaf basketry made by the Cayapa and illustrated in pl. XCIII, 2, 5. In the first instance the technic bears a resemblance to checkerwork, while in the second it is based on the same kind of manipulation which in cordage is known as the "half-hitch."

Neither twining nor coiling is used, and the same may almost be said of checkerwork, although there is one form of basket, the bottle-shape bait basket (pl. XCIII, 5), which has on its bottom a technic somewhat resembling checker (pl. XCV, 2). In this case several splints are used to form a wide unit element, and it cannot be strictly called checkerwork, but is rather wickerwork in which several splints instead of one are employed as a unit. In some specimens the resemblance to checker-

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

work is still more apparent than in the one here referred to, because these composite, wide elements are made to pass under and over one another several times instead of only once. This process is never employed except at the starting point of this form of basket.

In detail the technics employed by the Cayapa in their basketry are as described below. Further, in addition to its use in basketry, twilling is employed in making mats and fans, and wicker is used in certain burden-bands and in fan-handles.

WICKERWORK

Wickerwork, the simplest of the two-element technics, consists of the passing of a single active or woof element over and under successive passive or warp elements. The Cayapa employ this technic almost solely in connection with the material derived from the aerial root called pitigua and for the making of five forms of basketry: a burden-basket, a shallow rectangular basket, a bottle-shape bait basket, a more or less globose basket used in carrying fruits and as a general household utensil, and a long tubular basket used especially as a receptacle for spindles. Examples of burden-baskets are shown in pl. XCII, 4, 7, while the other forms are illustrated respectively in pl. XCIII, 1, 3, 4, 12.

Ordinarily the Cayapa wickerwork is comparatively tightly woven, as is shown in illustrations referred to. There are, however, two special types of wicker basket which are open in their technic. Both are made for the purpose of allowing water to pass readily through them, being used especially as cages for live crayfish which are kept in the river until required for food.

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

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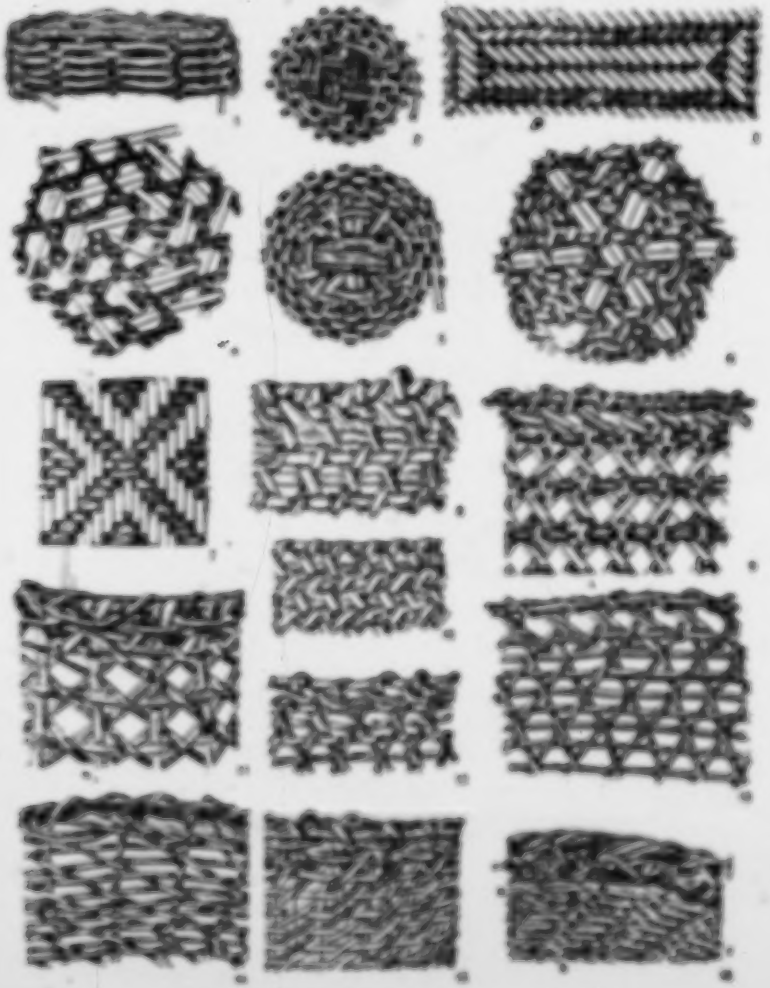

BASKETRY TECHNICS

[p.192 (A)]

3: Barrett E-5 (1908-1909) 1925
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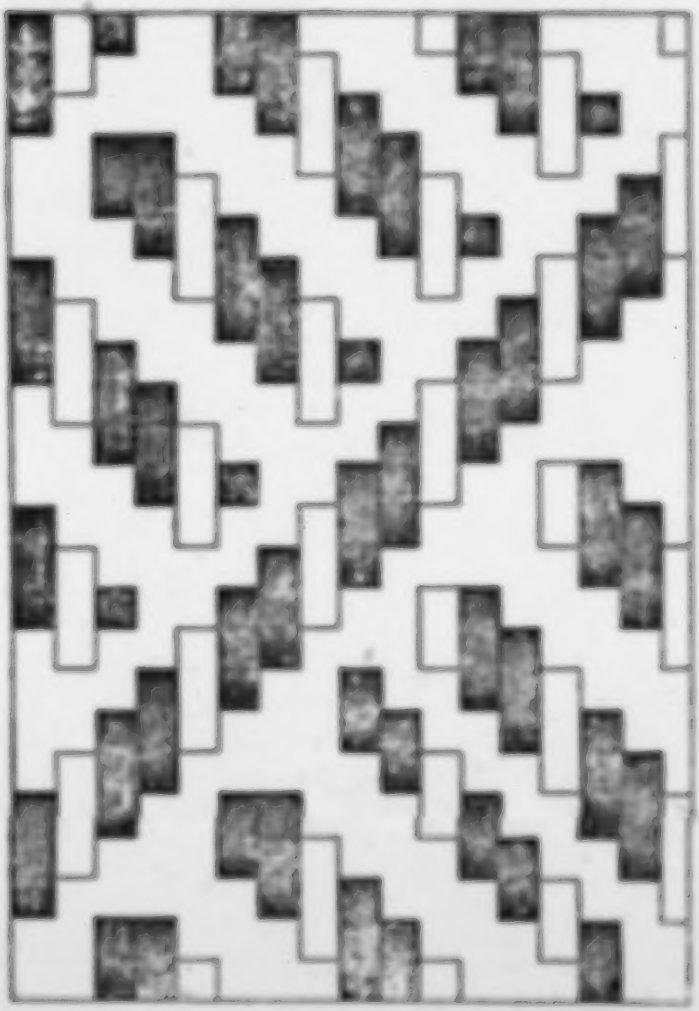

[Transparency overlay on p. 192(a)]

3: Barrett E-5 (1908-1909)1925
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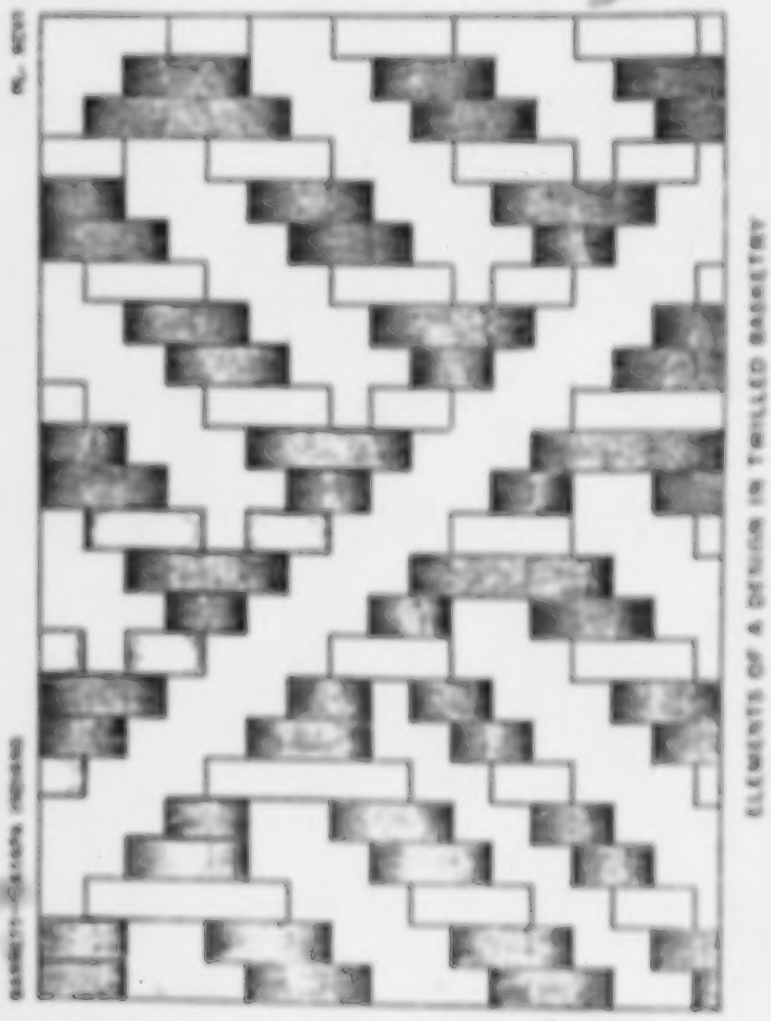

[p. 192 (R)]

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

285 thus kept in the river until required for food. Both of these open types are similar in form to that shown in pl. XCIII, 4, and one of them has tightly woven sides identical to those of the basket shown in this figure, but has what may be termed an open-work wicker bottom. The other has open-work sides as well as bottom. A portion of one of these sides near its upper edge is shown in pl. XCIV, 8. This openness is produced by the simple device of spreading the elements apart so as to leave openings or meshes of the desired dimensions. In the one with the open-work flat bottom only, these openings or meshes are produced by the omission from this portion of the basket of the long, continuous active element which goes back and forth in the ordinary tightly woven wicker basket alternating with the shorter active elements which are later turned up to form the sides of the basket.

The rectangular bottom of the tightly woven wicker basket deserves special attention on account of the particular technic involved. In making such a rectangular base, the details of which are shown in pl. XCV, 1, several parallel splints are first laid down to form the warp elements. One end of a very long woof element is next passed over and under alternate ones of these. A second and very much shorter woof splint is next placed parallel to the first and is so inserted as to pass over and under the warp splints in an order the reverse of that of the first woof splint. The point at which this second woof splint crosses the last of the warp elements at one edge forms the turning point for the first woof splint. This is turned directly back in a kind of loop and is passed parallel to itself but in the opposite direction, and

3: Barrett E-5 (1908-1909)1925
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285 over and under the elements of the warp. It crosses these in the same order which it first took and in the reverse order to that in which the second woof element crossed them. Thus, up to this point, the original set of parallel warp elements has been crossed three times, twice by this long, continuous element, and once by an ordinary, short woof element which later turns up at its two ends to form part of the sides of the basket. This long, continuous woof element having now reached the side of the basket from which it started, a second short element is inserted. This element, which makes the fourth woof to cross the warp elements, is manipulated in exactly the same manner as was the second. The long, continuous woof element again reverses its direction by means of a turn about the end of the second short element just mentioned and passes back, in the same manner as before, in and out among the warp elements and, reaching the opposite side of the set, again reverses its direction and again passes back to the opposite side of the basket, there being of course previously inserted a third short woof element. Thus, by means of this long, continuous splint which passes back and forth in serpentine fashion across the bottom of the basket in such manner as to include between the sides of each loop an ordinary short woof element which later turns up to form the sides of the basket, a rectangular bottom is produced. The lengths of the sides of this rectangle are governed by the size of the basket desired, but in every case the rectangle is longest in the direction in which the continuous woof splint is running.

By the nature of this technic the spacing of the warp

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elements on a long side of the basket is much wider than that on a short side or end, and it would appear that in this fact lies perhaps an explanation for the use of the long, continuous, serpentine woof element. If all the woof elements were short ones whose ends turned up to form warp elements at the ends of the basket, the number of these warp elements would be far too great for practical use. By the insertion, on the other hand, of this continuous woof element, the number of these warp elements is reduced by half and the spaces between adjacent warp elements increased sufficiently to permit the woof elements on the sides of the basket to pass in and out among them with ease. As it is, the warp elements on the ends of the basket are considerably closer together than are those on the sides, so that the number of these elements at each end of the basket is somewhat greater than that at each side, although the sides are considerably longer than the ends. 285

In all baskets made in this technic, except the one with the open-work sides as well as bottom, the borders are finished by a simple looping over of the warp elements, as shown in pl. XCIV, 7. The method of manufacture of a Cayapa wicker burden-basket, and especially the method of finishing the border, is shown in pl. XCII, 4. Such a basket is made over another burden-basket as a foundation and to give it its correct size and form. As the basket nears completion, each warp element, which until now has projected upward, is bent over, sometimes inward and sometimes outward, and brought down along itself and caught by the woof elements as they pass in and out among the warp. This produces a series of large

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285 loops which project upward and replace the simple warp elements. These loops now become the warp elements, and each is used as a unit in the weaving which proceeds as before until the extreme edge is reached. Here from one to three rounds of pitigua, usually unsplit, are passed through the loops themselves and around the whole opening of the basket. The loops up to this point are quite large and project loosely above the woven portion of the basket, as shown in pl. XCII, 4. Also the extreme ends of the splints project downward at the sides of the basket. Now, by pulling these projecting ends downward, the slack in the loops is removed and the inserted pitigua drawn firmly down upon the edge of the woven portion of the basket, thus producing a smooth and even edge or border. Nothing remains, then, to complete the basket except to cut off the loose ends of the warp elements which project from the sides of the basket. The length along which each of these warp elements is returned down through the side of the basket to make this binding varies greatly and may be as great as half the height of the basket, as is the case in the large burden-basket shown in pl. XCII, 7. On the other hand, it is rarely less than equal to the width of eight or ten of the woof elements, thus in any case giving a good firm border.

The only other type of border found in wicker basketry is that shown in pl. XCIV, 8, which was found in only one instance—a very open-meshed basket made of pambile. In this type the projecting warp elements are taken in pairs and each pair is bent inward over a transverse splint placed along the inside, then passed diagonally

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downward, then outward to a position in front of the next pair of warp elements, and finally inward and behind the next pair of these elements. Along the outer surface and directly opposite the above-mentioned horizontal splint, another is passed, and these two are secured by two splints passing spirally and in the same direction along the entire border in such manner as to fasten firmly the pairs of turned-down warp elements. 285 •

As above mentioned, the wicker technic finds slight use outside of basketry. It is employed in weaving the broad head-bands of the burden-straps which are made of pitigua or of the fibers from the leaf of the palma real, and occasionally in weaving the outer surface of the handle of a fan. In the use first mentioned the elements employed are fairly broad strips of pitigua, as shown in pl. CIII, 1. In the second, the warp elements are made by placing from four to six of the small cylindrical palma-real fibers side by side to form a broad and fairly rigid element. The woof element consists sometimes of but a single palma-real fiber, but usually of two placed side by side as shown in pl. CIII, 3. Occasionally more than two of these fibers are used in such a woof element. The surfaces of fan handles are almost always made, like the blades, in twilled technic, but occasionally one is found which is in wicker, as in the example shown in pl. CIII, 5. 285 293 [982]

TWILLING

The second technic consisting of two elements is twilling. This is employed in the making of hamper-shape baskets (pl. XCIII, 2, 5, 6, 10, 11) long, tubular 285 415

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baskets (pl. XCIII, 8), used as receptacles for spindles; mats (pl. CVI, 1, 2); fans (pl. CIV); and rings used as rests for calabashes (fig. 13). In all of these the material used is the bark of the fan-leaf palm, locally called pambil. But one type of basket has been encountered in which this technic is found in combination with another material: this is a square-bottomed, cylindrical basket similar in form to that shown in pl. XCII, 3, and is made of pitigua. A section of the side and border of this basket is shown in pl. XCIV, 6.

The manipulation of the elements in twilling varies considerably in Cayapa basketry. There are three fundamental methods of handling these elements, as follows: (1) A method by which one element passes over two and under two of the elements which run in the opposite direction (pl. XCIV, 3); (2) a method by which it passes in a similar manner over three and under three (pl. XCIII, 6, 10); (3) a method in which an element passes over seven and under one (pl. XCIII, 2, 5, 8, 11; and pl. XCIV, 5). The last form is said to have been introduced among the Cayapa by the Indians of Colombia, and in substantiation of this it may be noted that the few Cholo who now live on the Rio Cayapas use this form of twilling extensively. The two simpler forms of twilling, so far as could be ascertained, have been long in use among the Cayapa.

In case no design is attempted, as in the basket shown in pl. XCIII, 11, or a simple design be desired, as in the baskets shown in the same plate, 6, 10, and pl. XCIV, 2, 3, these fundamental methods of handling the elements are not varied throughout the basket. If, on the other

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hand, comparatively intricate patterns are attempted, these methods of handling the elements may vary greatly and appear to be governed solely by the desire of the maker to produce such combinations as will bring to the surface elements of the desired colors in the necessary sequences.

In pl. XCIV, 1, 4, are shown instances of changes of manipulation obviously for decorative purposes. In fig. 4 of this plate the pattern consists of a horizontal row of dots followed by a row of squares joining at opposite corners in such manner as to resemble a section of an old-fashioned lattice; this is followed in turn by another row of dots and another row of squares. This pattern exists in the dark-colored elements as well as in the white ones, and the order of the appearance of a white or a dark element upon the surface is the same for the same direction—that is to say, whether both the elements under consideration run obliquely from right to left or vice versa. The order for those running downward from right to left is thus the direct complement of the order of those running from left to right. In the first case it is over one, under one, over two, under four, once repeated. This cycle completes two rows each of the dots and connected squares, which may be considered a full set of the elements of this pattern. When the elements are taken downward from left to right, the order is: over one, under one, over four, under two.

In the basket shown in pl. XCIV, 1, the manipulation of the elements is even more complex, owing to the fact that the design is much more complicated. In every case the particular pattern employed calls for regular

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numerical cycles of its own in the manipulation of the splints. In the design shown in the illustration referred to, the cycles produced by this fairly intricate pattern are exhibited in the accompanying pl. XCVI. In the first of these the cycle is that which results from following the splints downward from right to left, while the second is the result of following them downward from left to right.

[445]

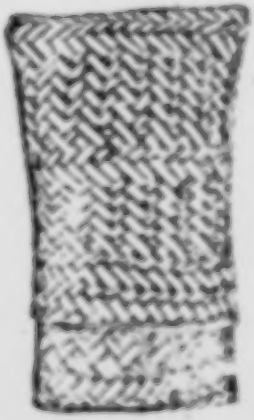

FIG. 17.—Twilled trinket basket

FIG. 18.—Twilled trinket basket

Taken separately, these two show fairly similar and very simple patterns. If, however, they are superposed, the points marked being taken as initial points, the intricate pattern in white shown in pl. XCIV. 1, results. From these cases and others similarly analyzed it is therefore evident that the exact mode of manipulation of the splints in all Cayapa twilling in which any intricate

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pattern is attempted is governed entirely by the pattern desired, and that any numerical cycle will be employed which will bring to the surface the elements required to produce the desired pattern.

In connection with the change of sequence of the elements in working out an elaborate design, the technical processes involved in changing the direction of a line in a simple design, such as a zigzag, should also be noted. By the very nature of this technic the angle formed in changing the direction of a line is a right angle, as may be seen in pl. xciv, 6. The change in direction is accomplished by shifting, after the vertex of the angle is past, the point of emergence of each successive horizontal element one vertical element to the right or to the left as the case may be. In this way each of the horizontal elements continues to pass over the regular number of vertical elements as the outer surface of the basket is viewed. The same is not true of the vertical elements however. Immediately in the angle the vertical elements are so crossed by the horizontal ones that only one width appears in the case of the first element, three in the next, and five in the third, after which the two divergent lines of vertical elements run regularly over three and under three. The procedure in the over-two and under-two twilling is the same except that the odd

FIG. 17.—Twilled winkit basket

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[5:2]
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numbers of elements required to change the direction of the line are one and three instead of one, three, and five.

The details of twilled basketry making are well exemplified in the case of the hamper-shape basket which is such a characteristic form among the Cayapa.

In beginning a basket of this hamper form the two sets of elements are laid down at a right angle one to the other upon a level surface, usually a piece of bark cloth spread upon the floor or upon the lap of the weaver. They are first laid with their dark sides uppermost and are crossed in the regular manner as later on in the weaving. Along this initial line the weaver may cause any given element to pass over three of the elements running at right angles to it, and this is frequently done. As frequently, however, such an element passes over one only of the elements that pass in the opposite direction, and the element thus passed over emerges from beneath and in its turn passes over the next element which is laid parallel to the one above mentioned. Thus along the middle line, that is, the starting line, of one of these baskets, there may be a single row in which the elements passing in one direction go over only one of the elements passing in the opposite direction. Beyond this point they pass in the prescribed manner over three and under three, or, in the rare instances in which this is used, over two and under two.

These methods of beginning the base of such a basket are also invariably employed in those baskets in which the sides are made in the more elaborate over-seven
285 and under-one technic above referred to. No instance
171 was observed where this more elaborate technic had been

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[171]

employed upon the bottom of a basket, not even among the Cholo.

Having first laid down the elements to be used in forming the bottom of this basket, and having manipulated and crossed them properly for perhaps a couple of rows on each side of the middle line, the whole is carefully inspected and the desired design decided on. If it is determined to make a basket in which one set of the elements shall have its dark surface uppermost while the other has its light surface turned up, the elements already laid down are pulled far enough apart to permit the turning over of the one set in order to bring the light surface into view. Frequently baskets are made in which all the elements used have the same surface exposed, for it is feasible to work out a design in case both sets have the same surface uppermost. In such case the design is given purely by the technic itself; and by changing the direction of the twilling, effective results are obtained.

Having, then, determined on the pattern, and the elements having been properly arranged, the twilling proceeds with the adding of more elements as required according as the size of the bottom increases, until the proper dimensions are reached. This results finally in a quadrangular twilled area of the size needed for the bottom or for the top of the hamper, and with a great number of ends of elements, approximately equal in length, projecting from the sides. From this point on no more elements are added, the elements having been properly selected with respect to length, so that these ends are quite sufficient to complete the sides of the basket. Or-

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285 dinarily two of these bases are completed before the sides of either are turned up. They are then carefully measured one to the other, since one must be a trifle larger than the other, as one becomes the upper half or cover of the hamper while the other becomes the lower half or body, and they must fit with fair exactness. At this point a string, a small piece of pitigua, or a small strip of the rampile basket material itself is passed round this quadrangular base and looped under one element at each corner, thus marking exactly the lines along which the sides and ends are to be bent up and especially the points at which the corners are to be made. After gently bending up to a vertical position the untwilled elements along the lines marked out by this string, the twilling then proceeds as in the usual manner and with whatsoever variations of design or technic may be desired until the edge of the basket is reached.

Having arrived at the edge, a piece of pita cord long enough to pass round the basket is placed in along the line upon which the elements are bent over to form the border and serves as a kind of adjustable "draw-string" which may be pulled tight or left loose as necessity demands. Without this, the edge, and later the body of the basket, would gradually work loose and become ragged, but with the draw-string it is not only possible to keep the basket intact, but also to adjust the size of its opening to that of the other half of the hamper.

As is shown in pl. XCIII, 10, 11, on completing the basket to this point there still remain the projecting ends of the two sets of elements, one set outside, the other inside the basket at its edge. These are now employed

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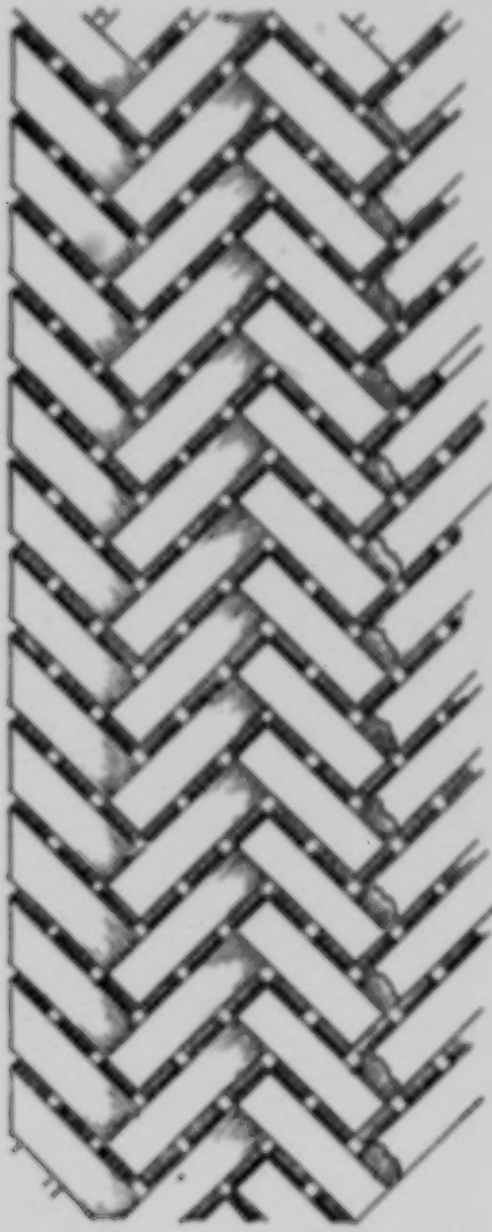

BORDER FINISH OF A TWILLED BASKET

[p. 204 (1)]

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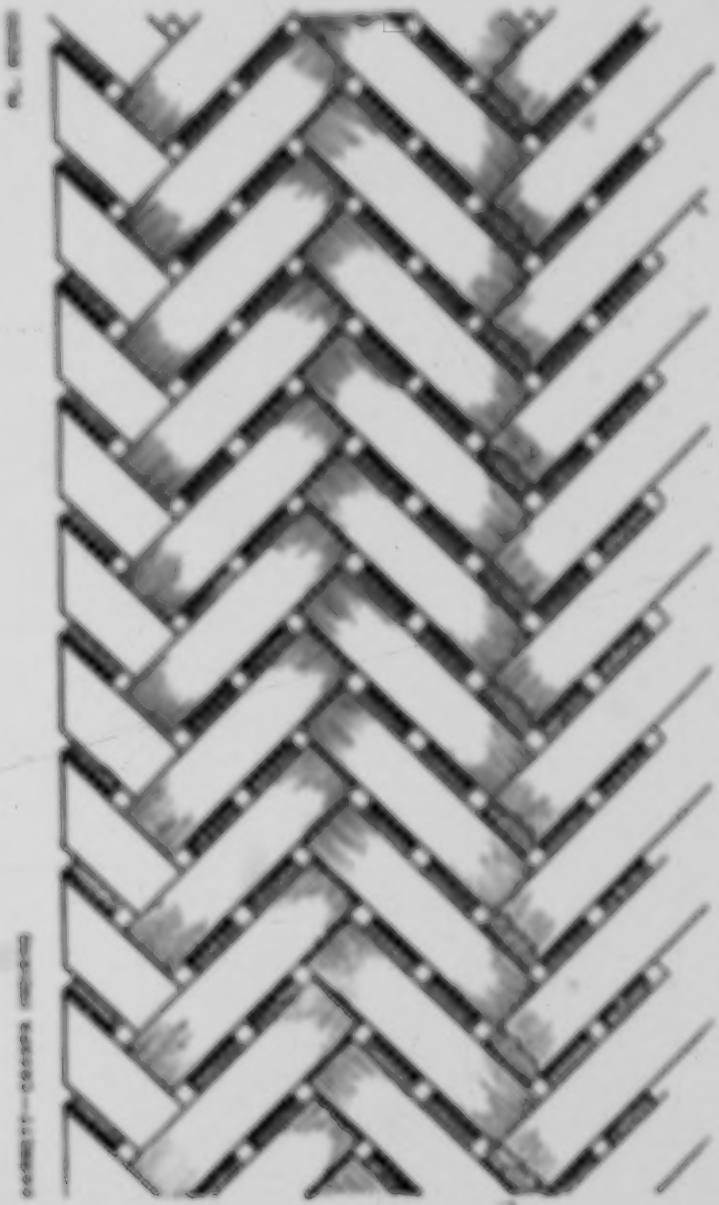

[p. 204 (a)]

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in binding the edge of the basket, which is accomplished by either one of two general methods. In the most commonly employed of these the outer set of projecting ends only is used, the inner splints being cut off flush with the inner surface of the basket. In this method of binding there are three variations, as shown in pls. XCVII-XCIX. The essential features of these are the same, and involve first the turning over of each projecting splint at an angle of ninety degrees to its former course, and then passing it back down the outer surface of the basket in such manner as to bind its end securely. The most frequent procedure is to turn such a splint inward and to pass it first behind two, next in front of three, and finally behind three transverse elements on the outer surface of the basket (pl. XCVII). At its emergence at this last point it is cut off evenly with the surface of the basket. In the other two variations of this method, such an element passes behind one, in front of three, and behind three (pl. XCVIII), or behind one, in front of two, and behind two elements (pl. XCIX).

In each of the above instances there still remains upon the inner surface of the basket and projecting from about the border, the other set, or half the total number of elements employed in weaving the basket. These are simply cut off flush with the last transverse elements from under which they emerge, thus leaving this inner surface smooth. There remains then only the adjustment of the size of the opening of this half of the hamper. This is done, as before stated, with the "draw-string," which is then tied securely and holds the opening to its proper size, although it may later require adjustment, as the string stretches and the opening changes.

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285 The second method of finishing the border involves turning both the outer and the inner sets of elements inward and passing them down the inside of the basket instead of turning the outer set only inward and passing its elements down the outer surface as just described. As these elements turn inward and downward, each takes a direction at a right angle to its former course. They are at the same time twilled together for either one or three rows down along the inner surface, thus producing at the edge two thicknesses of twilling. The ends of the inner set of elements are then cut off, while those of the outer set are simply passed down over several (in the cases in hand the number is five, seven, or nine) of the transverse elements of the regular wall of the basket and each is then securely fastened by being passed behind three transverse elements in the wall of the basket itself. On emerging from behind these, such an end is cut off flush with the surface. The inner surface of such a border is shown in pl. c.

The same "draw-string" as that used in the above-described types of border is required for this one, although this finish produces a much smoother and thicker border than the others, since there is here a double wall of twilling.

The foundations or starting points and borders of twilled baskets of forms other than the hamper are the same in principle as those employed in the hamper-shape baskets, the only variations being those which arise from the form of the basket.

The border shown in pl. XCIV, *f*, is a notable exception, just as this basket itself is notably different in form and

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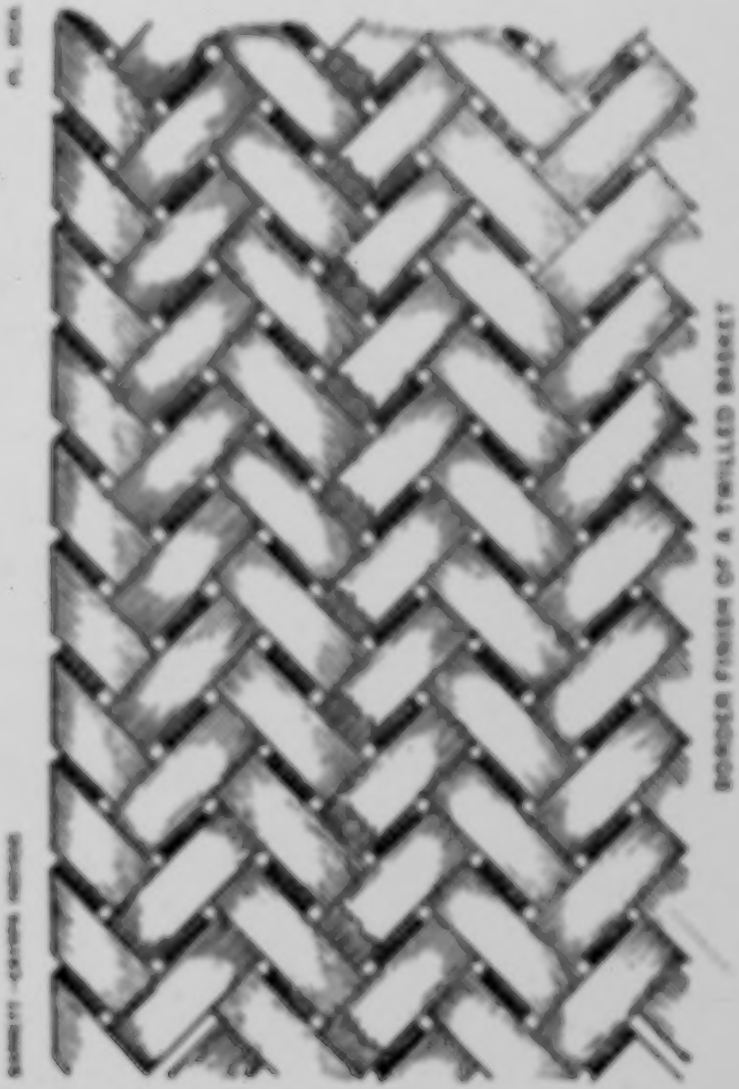

BORDER FINISH OF A TWILLED BASKET

[p. 206 (A)]

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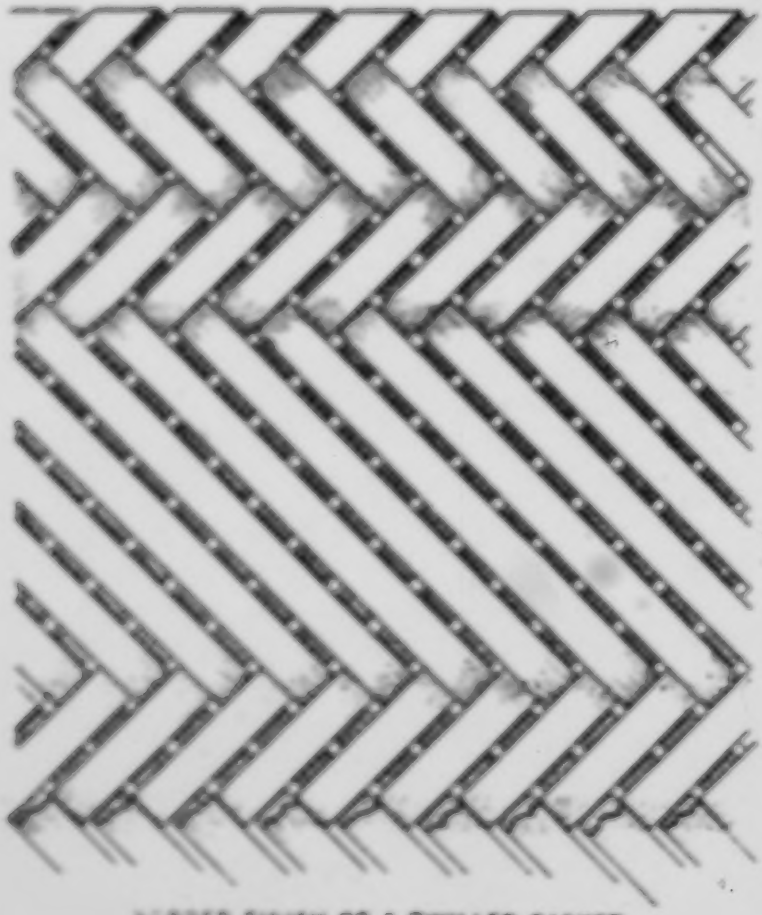

BORDER FINISH OF A TWILLED BASKET

[p. 206(B)]

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material, as has been previously pointed out, from those of this technic. The border in this case is essentially the same as that shown in fig. 8 of the same plate, which has been described in detail in speaking of the borders of wicker baskets. It differs only in that the ends of the twilling elements are turned over in groups of three instead of in pairs, in that one horizontal element is run around on the inner instead of the outer surface, and in that the two spiral binding elements pass in opposite directions instead of in the same direction, thus causing them to cross instead of to parallel each other. 285.

KA'PŪ TECHNIC

Of the three technics in which elements passing in three different directions are employed, the simplest is that called by the Cayapa ka'pū, from kapū'ka, signifying eye, this name being derived from the hexagonal opening produced by the technic, which the Indians conceive to resemble an eye. It will perhaps facilitate the description of this technic to letter, in the accompanying illustrations, the elements used therein and the figures and angles which these produce. [531]

Three pairs of elements are required to produce a single unit of this technic, the elements of each pair passing in their particular direction and standing in certain given relations to the remaining elements in the set. Thus, in fig. 18 the two elements A and A′ pass obliquely upward toward the right, and B and B′ pass obliquely upward toward the left, while C and C′ pass horizontally. The exact relation in which any one of these elements stands

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295 to any other element is shown by this figure and need not be described in detail here. It should be noted, however, that it is by means of the third pair of these elements that the other two pairs are bound. If taken alone, any two pairs of these elements are found simply to pass over each other, while the elements of the third pair pass through the angles formed by the intersections of the elements of the other pairs and thus bind the whole figure firmly together. This holds good in every instance, no matter in what order the pairs of elements are considered. The details of this technic are well illustrated in the baskets shown in pl. XCII, 8, and XCIII, 9. An examination of these will show that the above statements concerning the relations of these pairs of elements one to another in a unit figure holds true for the entire basket, and that if one element, A, passing in a given direction stands in a certain definite relation to another element, B, passing in another direction, then all the elements which are parallel to A stand in the same relation to all elements running parallel to B.

531 The result of the crossing of these six elements is two 295 equilateral triangles, X Y Z and X′ Y′ Z′, superposed in such manner as to produce a six-pointed star as shown in fig. 19. The central opening in this figure is a hexagon, *a b c d e f*, and it is this opening which characterizes the technic and gives the basket the name of ka′pū pickalyi, or eye-basket.

295 In beginning the manufacture of a basket of this technic no special knot or other device is used. Six elements are so laid on a convenient flat surface as to produce the first or central "eye," which may be con-

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sidered as the initial six-sided figure about which the rest of the bottom is constructed. These elements first laid down must stand in the relations one to another that are above described. From this point on, the formation of the bottom of the basket is a simple process, consisting of adding the necessary elements in the proper order and along lines parallel to those of the original six elements above mentioned. This process of adding on all six sides of the original opening continues until a hexagonal bottom of the desired dimensions and proportions is produced. The size of such a bottom is obviously governed by the size of the basket desired. In form these bottoms are usually equilateral except in the case of the particular type of burden-basket shown in pl. XCII, 6, in which the bottom is about twice as long as it is wide.

From this woven bottom a large number of radial elements extend out on its six sides in as many groups, each group composed of parallel elements. Obviously the angle between any two of these groups occurs at one of the corners of the hexagonal woven area and is an angle of approximately one hundred and twenty degrees.

At this point in the process of weaving these radial elements are turned abruptly up to form the vertical sides of the basket. Theoretically the individual elements themselves might be brought up in a perpendicular position, or at almost any desired angle to the perpendicular, so long as the result as a whole is a vertical wall, but in practice the same technic is maintained in these sides as is used in the bottom. In order to produce this, each element is turned up in such manner that it slants along this wall of the basket at an angle of about thirty

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285 degrees to the perpendicular, one set of elements slanting toward the right while the adjacent set slants toward the left, the inner angle formed by any intersection being therefore one of sixty degrees. As a matter of fact the exact slant of these elements varies considerably, and

FIG. 18.—A unit of basket technic, showing relations of the three pairs of parallel elements

the angles made by their intersections vary accordingly, so that the resultant figures have a variety of shapes, although all approach more or less the true hexagon as shown in the schematic figs. 18 and 19.

However, if only the elements used to form the bottom were employed in making these sides, there would be but

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the two sets of elements crossing obliquely and a four-sided opening or mesh would result. As has been shown, however, in this technic elements passing in a third direction are required, and it is therefore necessary to bring two new horizontal elements into combination with each set of two pairs of the diagonal elements above mentioned which go to produce the four slanting sides of the hexa-

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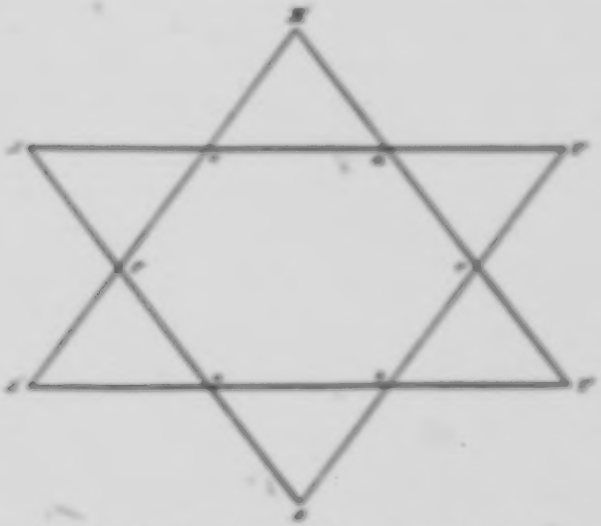

FIG. 18.—Component parts of a unit of ka'pil technic

gon, as shown in fig. 18. These two horizontal elements cut off the top and bottom of the quadrilateral opening which would be produced by the simple crossing of the elements brought up from the bottom of the basket alone. They are produced by inserting another splint in such manner that it passes horizontally in a clockwise direction and forms a continuous spiral, passing up the

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285 side of the basket and cutting through the lowest and the uppermost angles respectively of the quadrilateral figures formed by the intersection of the four diagonal elements which came from the bottom of the basket. This produces two more sides and two more angles, and the result is that all the openings in the sides as well as on the bottom of the basket are hexagonal in form. As a rule a very long piece of material is used as this horizontal splint, but whether long or short it may be made a continuous spiral throughout the whole side of the basket by inserting a new splint when the end of the one in use is reached. This is done by overlapping the two splints for an inch or two and in this way giving the effect of continuity. Thus the sides and the bottom of such a basket are built up in exactly the same manner, except that, owing to the ever-increasing diameter of the bottom, it is necessary to add a new splint each time another horizontal element is required, instead of using a continuous splint which passes spirally about the basket as is done in the above-described method of treatment of the side.

In the closely allied technic called tci'nde the prevalent method of inserting these horizontal elements is by putting in a separate splint for each horizontal element in the basket. In this case each splint makes simply one complete circle about the basket and has no connection whatever with any of the other horizontal elements. So far no instance of this treatment of these horizontal elements in the ka'pū technic has been encountered. It is quite possible, however, that a larger series of these baskets might show some cases of this,

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just as one exception to the usual clockwise direction of the long continuous spiral element has been encountered. 285

There is one notable exception to this shape of opening or mesh. At the six corners of the bottom of the basket the openings are pentagonal instead of hexagonal. This is due to the fact that no horizontal element passes through the opening at its lowest inner angel (angle

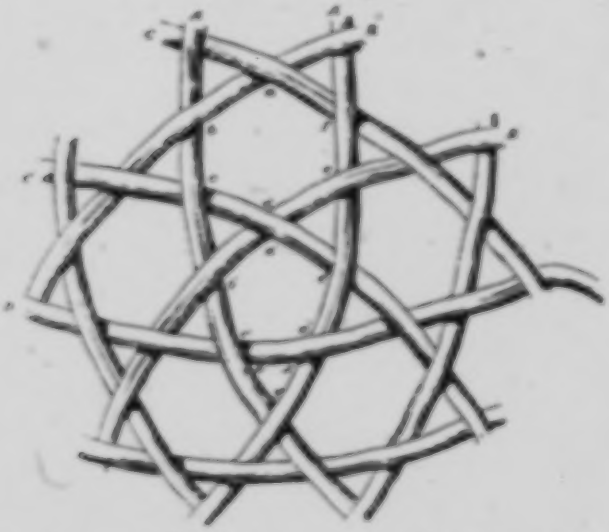

FIG. 20.—Pentagonal opening at one corner of the bottom of a basket of ka'pū technic

c' a' b', fig. 20). A horizontal element, D, cuts across the opening at its topmost angle (angle x y z) and thus adds to the figure formed by the regular oblique elements, A, A′, B′ and C′, only one more side instead of adding two sides as is done when two horizontal elements are used in the regular way.

The reason for the absence of this second horizontal

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285 element in this opening is that the element c', which was the upper horizontal element used in the preceding mesh, *a b c d e f*, now changes its course as it turns upward to enter the side of the basket and becomes one of the diagonal elements. At this transition point between the bottom and the side this element c' really occupies the same position and stands in the same relation to the remaining elements at this point as does the regular lower horizontal element in any other mesh. If a lower horizontal element were really to be inserted at this point, it would necessarily cut across the present angle *c' a' b'* and would stand in the same relation to the other elements it would cross that the element C now occupies in crossing A' and B to form the two angles *f a b* and *e f a*. As a matter of fact, however, c' now occupies exactly this position, so that no extra element could be inserted at this point.

It is an interesting fact that, when the horizontal element which runs as a spiral about the basket is added, it is not simply inserted at the point where it becomes active as a horizontal element, which is always at one of the points of the hexagon which constitutes the bottom of the basket, but the initial end of the element passes back diagonally up the side and serves as a diagonal element the same as if it were one of those originally used as part of the bottom.

Furthermore, it should be noted that in all the cases at hand, except one, the spiral so produced progresses in a clockwise direction as the exterior surface of the basket is viewed. This is in accord with the observed tendency of Cayapa weavers in general to proceed in

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their work toward the right, so that the isolated instance in which the spiral progresses in a contra-clockwise direction is quite striking. 285

The regular process of weaving, as above described, continues until the border of the basket is reached, where any one of several methods may be brought into play in finishing the border. The one most usually employed is that of bending toward the right, at the border, each pair of diagonal elements at their last point of intersection at the very edge of the opening, passing these inward and downward behind a single strip of pitigua, and then out upon the outer surface of the basket. They then pass more or less obliquely across the adjacent pair of intersecting splints, and finally back onto the inner surface of the basket, and either simply behind the next pair of intersecting splints or behind these and then outward through the mesh next below. There is almost invariably employed a spiral wrapping about this border, sometimes in one direction, sometimes in both, which latter method makes two crossing spirals. As this wrapping of the edge is done, there is ordinarily placed along the outside of the basket, at its edge, an extra splint which is included in the wrapping, thus giving greater strength and greater rigidity to the basket. Now and then one of these extra splints is added on the inside as well. Furthermore, occasionally a basket is found in which the loose ends of the diagonal elements are simply bent over and laid horizontally along the edge and are included within the spiral wrapping.

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285 In burden-baskets of the type shown in pl. xcii, 8, and occasionally in other forms also, there occurs a very simple type of border finish, in which the ends of the diagonal elements are merely turned downward over the last horizontal element and made to pass along parallel to one of the regular diagonal elements forming the side. Such a border is shown in pl. xcrv, 12. In this particular case these returning diagonal elements pass upon the side of the horizontal elements opposite from those occupied by the corresponding original diagonal elements. Also they pass through the wall of the basket out in the hexagonal opening at any given point. As shown in pl. c1, such a returning element often takes exactly the same course as that of the corresponding original diagonal element, and it frequently passes through one of the very small triangles formed by the technic instead of through the hexagon. In fact it is sometimes superposed upon this original diagonal element to a certain extent. Further, this figure shows an interesting feature in that the wrapping of the border is continued down into the side along one diagonal line, while one of the ends of an original diagonal element is bent back on itself and passed back down into the side of the basket as a similar wrapping.

This ka'pû technic is perhaps more frequently applied than any of the others employed by the Cayapa in basketry. It is, however, confined entirely to basketry, and for this reason should be considered as ranking next to twilling, which is used in making mats and fans as well as basketry.

BORDER FINISH SHOWING RETURN OF DIAGONAL ELEMENTS AND WRAPPING

[P.216(a)]

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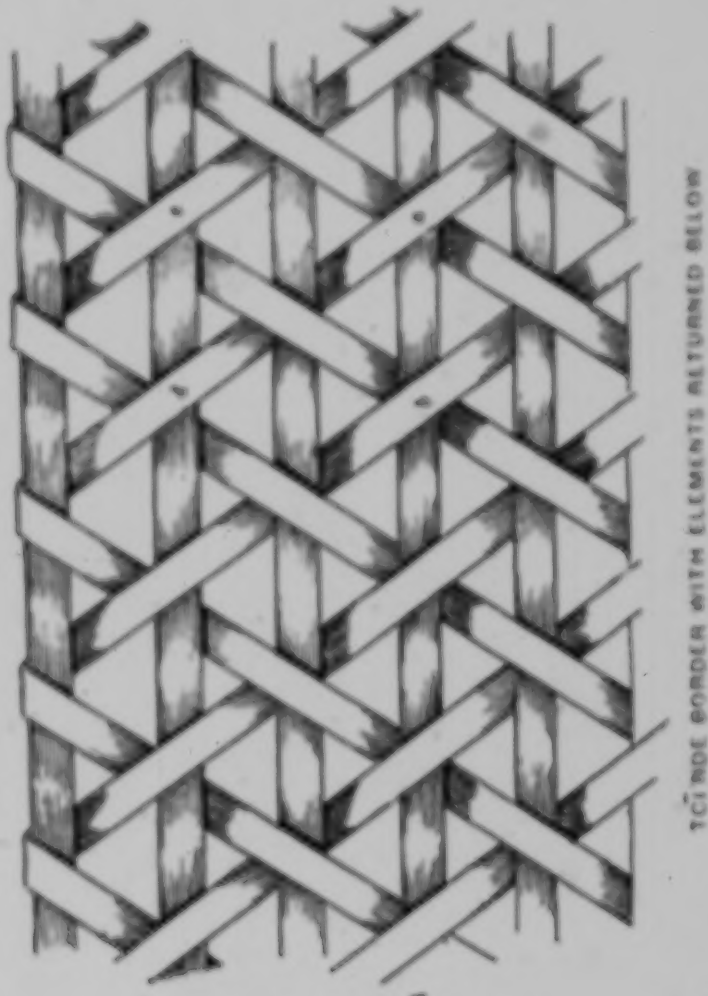

TCĪ ROE BORDER WITH ELEMENTS RETURNED BELOW

[p. 216 (8)]

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TCI'NDE TECHNIC

The second of the technics in which elements passing in three directions are used is that called by the Cayapa tci'nde, a name for which no translation could be obtained. The details of this technic are shown in pl. XCIV, 11, and pl. XCV, 4, 8, 10, 11. In pl. XCII, 1, is shown a typical basket of this technic. This, however, is one in which the diagonal elements of the sides are returned downward and produce a complicated form of the technic. 285.

In detail the tci'nde technic is identical with the ka'pū technic, except that there is added another horizontal element which bisects the hexagonal opening of the ka'pū and gives two trapezoidal openings (fig. 21). This is done by passing a splint horizontally through the angles at *e* and *f* (fig. 19) in such manner that it passes between the two diagonal elements which cross each other to form the angle of the hexagon at each of these points. The new horizontal element passes, therefore, under B and B' and over A and A' (fig. 18). This is the simple course of such a third horizontal element in its relation to a single one of the hexagonal openings of the ka'pū technic. Its course throughout a series of these openings on the side of the basket is the same as that outlined for a single opening, so that this third horizontal element passes continuously in this manner from one opening to the next throughout the whole series in the sides of a basket.

Such is not the case, however, on the bottom of the basket, where a special manipulation is employed, as is

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285 shown in pl. xcv, 4. Beginning with the hexagonal opening which forms the center of the bottom of the basket, the end of this third horizontal element is passed through the opposite angles at *e* and *f* of the hexagon (fig. 19), thus cutting this initial hexagon into two fairly exact trapezoids. In the instance shown in pl. xcv,

FIG. 21.—Detail of tul'ede technic

4, this initial insertion is so made that the horizontal element does not pass directly across the hexagon, thus forming two exact trapezoids, but in the majority of instances these figures are of fairly exact form. This element, after passing between the two diagonal elements which cross at *f*, extends on into the next hexagonal opening toward the left as the bottom of the basket is

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viewed. At this point the fundamental difference between the treatment of this third horizontal element on the bottom of the basket and that which it receives on the sides, begins to manifest itself. If this element on the bottom followed exactly the course which it does on the side of the basket, it would obviously go directly out in a straight radial line from the center of the bottom. Instead it folds under in such manner as to change its direction sufficiently to enable it to take a course toward the second intersection of elements forming the hexagon from that through which it has just passed. This brings it to one of the angles (angle *f o b*) formed by the crossing of the lower one of the horizontal elements forming this hexagon and one of the diagonal elements. It does not pass between these two elements, but entirely around them at their intersection. It then passes across the opening to the diametrically opposite angle of the hexagon. Here it passes between the two crossing elements, after which it again changes its course and passes directly to the next angle on the left. At this point it takes another turn around the intersection of the two elements which cross here and again goes to the diametrically opposite angle where it passes between the two elements that cross at this point. Thus, by a repetition of this process, this third horizontal element is made to move in a clockwise direction, as the bottom of the basket is viewed, and is caused to take a spiral course which makes it cross successively each of the hexagonal openings of the entire bottom of the basket. In every case except the first the change of direction is given by a move from the angle at which

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285 this element enters a given hexagonal opening to the angle next adjacent in a clockwise direction. In the first case this move is one of two angles in a clockwise direction instead of one. This variation produces an interesting sequence in the number of openings passed over by this element in a given complete circle. The first four changes of direction after the element leaves the hexagon in which it commenced cause it to pass over one opening only in each case. It then passes over two openings, this time running parallel to the initial direction it had at the outset. It next crosses one opening only, after which it crosses successively two openings each time for the next four changes of direction. On again reaching a point where its direction is parallel to that which it had initially, it crosses three openings, after which it drops to two, which in turn is followed by four sets of three openings. Thus by a series of these concentric hexagons in which the numbers of openings all follow the sequence above outlined, but with numbers which increase one each at each new revolution in the spiral, the entire bottom is built up until this special treatment of this third horizontal element finally gives place to its regular manipulation when the side of the basket is reached. The cycle may be reduced to a kind of formula in which x equals the fundamental number of openings passed over in any given complete circle of the horizontal element. The formula would then be $x + x + x + x + (x + 1) + x$.

It should be observed that in making this bottom the third horizontal element always stands in the same relation to any certain element in any given turn of its

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spiral course that it does in any other turn. An inspection of fig. 4 of pl. xcv will show this to be the case, and that where this third element passes round any certain element in one turn of the spiral it always passes round the same element in every other turn of the spiral. 285

On finally reaching the edge of the bottom, the looping of this horizontal element ceases, since this course is necessary only in order to increase the diameter of the bottom, just as the other horizontal elements are constantly added for the same purpose. The manipulation of this third horizontal element then changes, and it runs, as above described, either as a continuous spiral or, as is much more frequently the case, as a series of single detached bands, each passing completely around the basket.

In the cases in which the spiral treatment of this third horizontal element is employed, the horizontal elements which form the top and bottom of the hexagon are furnished by another spiral running parallel to this third element which cuts the hexagon into its two trapezoidal figures. Like the spiral element on the side of a basket of the ka′pū technic, the initial end of this one commences at the edge of the basket and runs down as a regular diagonal element to one corner of the bottom, where it changes its course to the horizontal spiral above mentioned.

In one instance in which the bottom of a basket is made in the ka′pū technic while the sides are in the tcī′nde technic, the two long spiral elements required to produce the latter pass down the side of the basket

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285 immediately adjacent to and parallel to each other, and enter it at the same corner of the bottom.

Any one of several border finishes may be used at the edge of a basket of this technic, but there is one border which is the result of a variant of this technic and which is similar to one of the border finishes used in connection with the ka'pū technic.

In this variant the two sets of diagonal elements, one of which reaches the rim of the basket on its outer surface while the other reaches it on the inner surface, are turned directly downward over the last horizontal element at the edge of the basket and each element is passed back down into the body. This is so done that each returning element of one set takes the direction of the opposite set, and so that each element passes in and out of the openings in the regular tcī'nde technic in such manner as to include between each pair of crossing diagonal elements one of the horizontal elements. Thus one of these diagonal elements passes over the two original elements which crossed at *d* (pl. CII) under the central horizontal element at its middle point, and over the two elements which intersect at *a*. The returning element passing in the other diagonal direction passes below at *e*, above and across the central horizontal element at its middle point and again below the two elements which intersect at *b*. An example of this technic is shown in pl. XCV, 10, and CII. In this manner each horizontal element in each unit of the technic is included between two of the diagonal elements.

This method of employing the returning diagonal elements produces a very tightly woven basket and may

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be used on the sides only or it may be made to cover also the bottom. As a rule both these forms of this technic are used chiefly in the making of cylindrical storage baskets of various sizes. 285

DŌ TECHNIC

The third of the technics in which the elements pass in three directions is that known to the Cayapa by the name dō. This technic in basic principles is similar to that called ka′pū, and differs only in that in any single unit of the technic there are three additional splints each of which passes through opposite angles of the hexagon, as is shown in the accompanying figs. 22 and 23. This divides each of these hexagonal openings into six small equilateral triangles and forms a relatively tightly-woven basket, when compared with the ka′pū and the tcī′nde technics.

In each unit in both the ka′pū and the tcī′nde technics there are, in addition to and surrounding the principal openings (which in the one case is a single large hexagon, and, in the other, two trapezoids), six very small equilateral triangles, formed by the superposition of the two large equilateral triangles that make up the geometric basis of the technic unit. In the case of this dō technic, however, there are twelve of these openings, all equilateral triangles and all of about the same size.

Perhaps the most striking feature of a basket made in this technic is the presence of three pairs of heavy splints running radially in its bottom, as is shown in fig. 23 and in pl. xcv, 6. Each of these pairs is used

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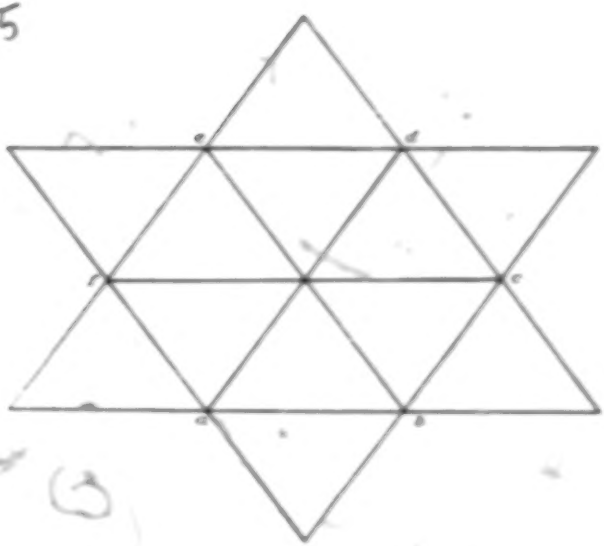

FIG. 22.—Component parts of d3 technic

FIG. 23.—Initial unit at the bottom of a basket of d3 technic

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in the bottom itself in exactly the same manner as a single splint would be, and each passes through two opposite corners of the hexagonal bottom. Thus these three pairs of splints pass out of the bottom at its six corners. On entering the sides, however, each of these pairs is divided and each element of a pair takes an independent diagonal course up the side of the basket, thus producing in its sides twelve elements independent from the three which cross the bottom. In most cases when one of these pairs divides, its units diverge and form angles of approximately sixty degrees one with the other, but in other instances they pass as independent parallel elements diagonally up the side of the basket. Sometimes both these methods of treatment are found in a single basket. As above stated, in the majority of instances these divergent elements take a diagonal course up the side of the basket, but now and then a basket is found in which one of them runs vertically while the other takes the usual diagonal course, as is shown in pl. XCV, 15, and frequently instances are found in which one or the other of such a pair of elements takes a course more or less approximating the vertical, as shown in pl. XCIV, 9.

In a cylindrical basket the straightness of the walls produces hexagons which are approximately equilateral, but in the rare type which has flaring walls the diagonal elements in the sides gradually diverge toward the opening of the basket in such manner that these hexagons are much elongated laterally. In no case, however, are extra diagonal elements inserted on account of this enlargement of the circumference of the basket toward its rim.

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285 The horizontal elements in the sides of such a basket are produced, as in the case of both the ka′pū and the tcī′nde technics, in one of two ways. They may be and usually are, the result of a single spiral splint which first passes diagonally down the wall of the basket and enters the side at one of its six corners where the bottom and the sides join; from this corner onward it proceeds as a spiral until the border is reached. The second and a very rare method of securing these horizontal elements is by inserting a new complete band for each element. The ends of such a band are made secure by overlapping, the point at which any particular band overlaps being some distance around to one side or the other from the overlapping of the elements next above and below, thus giving added strength to the technic.

As in the other two technics of this group, the diagonal splints in the sides of a basket of this dō technic are all employed in the construction of the bottom of the basket, and in no instance are any more diagonal elements added in weaving the sides.

The nature of the dō technic is such that there is no possibility of returning the ends of the diagonal elements downward even from the edge of the basket, as is sometimes done in the ka′pū and the tcī′nde technics, where this treatment of these elements forms one type of border finish. The triangular openings are so small, and the basket therefore so closely woven, that the returning of these elements down the side of the basket would be highly infeasible if not entirely impossible.

A notable fact connected with the manipulation of these elements is that in this particular technic the

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diagonal element which passes upward toward the left is almost always the one which passes between a horizontal element and the other diagonal element which passes up toward the right at the points where the three cross one another. This condition is quite different from that in the tcī′nde technic, for here what has been called the third horizontal element passes between the two diagonal ones. No comparison can be made with the ka′pū technic, since there is no point in this where three elements are crossed. 285

In finishing the borders of baskets of this technic the pairs of diagonal elements are usually bent inward and toward the right over a rod of pitigua, the ends of each pair being made to pass out in front of the pair next adjacent and toward the right, and finally down behind the second pair toward the right. To this simple binding, which in principle is the same as that most commonly used in baskets of the ka′pū and the tcī′nde technics, there is frequently added a wrapping of pitigua such as is shown in pl. XCIV, 9. Even more elaborate bindings, such as that exhibited in pl. XCV, 15, are sometimes used by the Cayapa, while among the Cholo a very elaborate one, shown in fig. 16 of the same plate, was found. In its essentials the first is the same as that above described, and it differs only in the number of elements (from three to five) bent over in each group, in having an extra horizontal splint bound along the outside, and in having three courses of wicker run into the relatively large openings just below the bound rim. 285 171

The second mentioned binding is essentially the same as that just described except that the ends of the pairs

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285 171 of elements when they reappear upon the inner surface of the basket are made to pass down under the similar pair next to the right, as is shown in pl. xcv, 16, which exhibits an inside view of this border. Thus there is produced a technic somewhat resembling what is commonly called herring-bone. The extreme edge appears to be very elaborately wrapped; this, however, is due to the manner in which two broad, flat wrapping elements are brought around it. So far as observed, this particular type of border finish does not occur among the Cayapa, although it is frequently employed by their Cholo neighbors, with whom this particular technic itself is more commonly used. In fact it is rather rarely used by the Cayapa.

BANDILAS TECHNIC

285 The technic called ba´ndilas by the Cayapa is the only one of the six technics employed by these Indians which has elements passing in four different directions. A horizontal, a vertical, and two opposite diagonal elements are required in this technic. Unlike the several above described, no special method is required in commencing a basket of this technic, its bottom being woven in exactly the same manner as are its sides. The horizontal elements on the bottom turn up, as do the diagonal and vertical ones, to form the elements of the sides. Obviously these elements, which are horizontal upon the bottom of the basket, become vertical when turned up to form the sides, and there is then the necessity of introducing other horizontal elements. This is ac-

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complished by introducing complete bands which pass round the basket and whose ends overlap. The spiral horizontal element is never used in this technic as it is in some of those above described. The bottoms of these baskets are almost always rectangular, but not square, and the basket as a whole appears somewhat more angular than do the baskets of other technics except the hamper-shape twilled baskets, in which angularity is especially sought. A basket of this technic is shown in pl. XCII, 3.

The border of such a basket is finished in a manner similar to that employed in finishing the borders of baskets of the ka′pū and tcī′nde technics above described. The vertical and diagonal elements project above the border and at their points of last crossing form sets of three elements, one vertical and two diagonal crossing at the same point. These three are as a unit turned inward and downward, passing diagonally out and in front of the next set toward the right and finally inward and behind the next set. As these sets turn downward they pass over a horizontal splint, which is thereby included in the fold of each set of three elements. There is usually placed also a similar horizontal splint on the outside of the basket and one on the inside, the whole edge being bound by one or two spiral elements. One or the other of these outer horizontal elements may be omitted, but ordinarily both are present. In pl. XCIV, 10, and pl. XCV, 9, are shown two examples of borders in which are present two spiral elements running in opposite directions. In both these also the inner and outer horizontal elements are present. In the example shown

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285 in pl. XCV, 11, on the other hand, the outer horizontal element is absent and there is but one spiral element. In this instance, however, there are two horizontal elements running like wicker through the openings immediately below the border and serving to give additional strength to it.

Baskets of this technic are among those more rarely made by the Cayapa. They have no special use, but serve any of the many ordinary household purposes to which Cayapa basketry is put, such as the storage of small articles and various foods.

In addition to the six technics above described, here termed the regular basketry technics, there are the two employed to a very limited extent in making the palm-leaf burden-baskets, which are used temporarily and only in emergencies for carrying burdens, or are now and then employed ceremonially by some shaman in his medicine practices. Two of these baskets are shown in pl. XCII, 2, 5.

285 324 In the first the technic resembles checkerwork to a certain extent. Such a conical basket is made from a single large pinnate leaf of the palm called by the Spanish chapil and by the Cayapa kūla′pō-tcī. Such a leaf is often as much as ten feet long. Perhaps eight feet of this is serviceable for basket-making, the two feet near the tip of the leaf being rather weak and provided with short leaflets. Having broken off the unserviceable section at its tip, such a leaf is bent at its middle point and its leaflets are interwoven after the fashion of checkerwork, thus producing a loosely woven basket with large meshes. The remaining ends of the

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leaflets are at last wrapped about the edge and bound loosely to secure them and produce the border of the basket.

The second type of palm-leaf basket is square in cross-section and has vertical walls. In this, two leaves which are made to cross each other at the bottom are used. The bottom of such a basket is usually about a foot square and the walls are two and a half or three feet high. The midribs of the leaves pass up the middle of the sides, and the leaflets, entirely unwoven, form the sides themselves. Extending up the four corners are heavy rolls formed by these leaflets, and it is in these that the particular technic employed only in this type of basket is found. When the two midribs are crossed at their middle points, they are securely bound together to keep them in position during the manipulation of the leaflets in making the corners of the basket. At a point five or six inches from this center, each of the midribs is then bent upward. As the leaves are thus placed in position, the leaflets extending out from the right-hand side of one midrib cross those extending from the left of the adjacent midrib. Beginning at the bottom, one of these leaflets is passed round a corresponding leaflet of the opposite set, its end joining that of the leaflet it has just gone round in passing upward to help form a core about which the other leaflets are in turn passed. In passing about this core each leaflet goes completely round it, coming back to the front below itself and then folding abruptly upward over itself to enter the core. This produces the technic which in the preceding pages was likened to the "half-hitch" in

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285 cordage. By this process of passing these leaflets from first one side and then the other round this core of leaf-ends, a corner of the basket is built up to its topmost point, where the ends of the last two or three leaflets are tied in such manner as to prevent the corner from loosening. In the same manner all four corners are built up and the basket is then complete.

Forms and Uses

285 415 According to form and use, Cayapa basketry may be classed as follows:

Burden-basket, flaring,	kū'bī (pl. xcii, 4, 7).
[482] Burden-basket with vertical sides and carried usually by means of two shoulder-straps.	fe' pickalyī, fe hi'nū pickalyī e' pickalyī (pl. xcii, 8).
Square-sided, temporary burden-basket of hoja de chapil,	kūla' pickalyī, kūla'pō pickalyī, (pl. xcii, 5).
Common cylindrical basket.	picka'lyī (pl. xcii, 1, 3).
Hamper-shape basket.	pū'te (pl. xciii, 2, 5, 6, 10, 11).
Bottle-shape bait basket.	tū'ñūtcītcī, dyūñūtci'tcī, (pl. xciii, 3).
Tubular basket used for spindles,	tcūrūkū'kū, tīwōtci'tcī (pl. xciii, 8, 12).

In addition to this classification, in which baskets used for certain purposes are of special forms, there are other terms indicating use which are applicable to a basket of any form, material, or technic. For instance, the name pū-pickalyī, from pū'ka, "fruit," and picka'lyī, "basket," may be used in speaking of any basket in which fruit is carried or stored.

As indicated in most instances by the names in the

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above tabulation, these several distinct forms of baskets have special uses. The four types of burden-basket are used almost exclusively for carrying heavy loads upon the back. The two types made of hoja de chapil are, as above stated, only for temporary use and are worthless except while the leaves are green. They are also sometimes used, even after they are dry and brittle, by the shamans in their medicine practices. The other two types, which are made of the very durable pitigua, are sometimes used as storage receptacles about the house when not needed for carrying burdens, which is their primary use.

The flaring basket, kû'bi (pl. XCII, 7), is carried by means of a single band provided with a special, wide head-band that passes across the top of the head as the bearer bends forward. This is primarily a woman's burden-basket and is used in the daily home life of the people for bringing fruits and other products from the fields and in a multitude of other ways. It is, however, rarely used in carrying wood, which is so often one of the most important functions of burden-baskets among aboriginal peoples. Wood is usually brought by the canoe-load from some point near the river where a suitable dead tree can be found.

The straight-walled basket, fe' pickalyi (pl. XCII, 6, 8), is made especially for carrying burdens considerable distances, as on long trail journeys into the interior. Within their own territory these baskets are rarely needed by the Cayapa, since practically all travel is by canoe. Such a basket is provided with two burden-bands attached near the top and the bottom respectively,

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285 482 and so placed that the broad bearing surface of each band stands vertically. These bands pass across in front of the shoulders after the manner of the straps of a knapsack. In the case of a large basket, such as that shown in pl. XCII, 8, the cords of the burden-bands pass round the basket to give the load greater security. Further, to add strength, and especially rigidity, to such a basket, two palm-wood rods are placed vertically on the inner surface of the basket, each being so placed as to be directly at the line along which one of the burden-bands is attached. The band is made to take a turn round this rod at each point at which it is attached to the basket. These rods are also of particular service in preventing the cords of the burden-bands from tearing out the relatively slender elements with which the weaving is done, when the basket is used in carrying such a load.

285 415 What is here termed the common cylindrical basket (pl. XCII, 1, 3, and pl. XCIII, 4) has no special use other than as a general storage receptacle for foods, etc. Such baskets are frequently kept in the loft or hung under the eaves of the house when containing articles only occasionally needed.

285 415 485 Perhaps the most useful basket of all those made by the Cayapa is the hamper-shape basket, pû'te (pl. XCIII, 2, 5, 6). This basket serves a variety of uses, chief among which are the storage of clothing and other valuable articles, and as a traveling case. No Cayapa enters on a journey of more than a day without one of these hampers, in which are his mosquito canopy, clothing, face-paint, any jewelry he does not wish to wear, and

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any other articles of value he does not deem it safe to leave at home.

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These hampers, especially when used in traveling, are tied about the middle with a cord or a woven band, and can be tumbled about without danger to their contents. They are frequently kept filled with articles in storage in the loft of the house, and often are suspended by the above-mentioned cord or band from the rafters or from one of the timbers at the eaves. Sometimes these baskets are made for special purposes. This is the case with the long one shown in pl. XCIII, 2, which was made especially for the storage of spindles, though the usual spindle storage-basket is a long tubular one like those shown in figs. 8 and 12 of the same plate. Another special form is the very small hamper-shape basket, such as those shown in figs. 15–17; these are used as receptacles for trinkets.

[227]

The bottle-shape bait basket, tū′ñūtcītcī (pl. XCIII, 3), is a very specialized form and, as its name implies, is made for the particular purpose of carrying live insect bait in the canoe while fishing. Its narrow neck is provided with a balsa stopper or with some leaves made into a bundle which serves the same purpose.

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Tubular baskets, called tcūrūkū′kū (pl. XCIII, 8, 12), are made especially for the storage of spindles, either full or empty. These baskets are usually from thirty to forty centimeters in length by from seven to fifteen centimeters in diameter. Such a basket is hung by one edge of its opening, so that it hangs at more or less of a slant. It is usually suspended from a rafter or other part of the house-frame near the eaves, within easy

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

283 reach from the floor. The Cayapa women are very
285 industrious, and whenever not occupied about the daily
415 routine of their houses and fields, are spinning and weaving. The spinning tripod (pl. CVIII) is always kept in a convenient place at one side of the house, and one or two spindles are usually kept on the small woven shelf near the bottom of the tripod. All extra spindles, whether empty or filled, are, however, kept in these long tubular baskets. When several spindles are filled they are emptied by winding the thread into balls, in which form it is stored until needed.

231 One very special form of basket not mentioned in the
285 tabulation above is the large bottle-shape basket shown in pl. XCIII, 7. This unusual basket was made as a cage for a chicken. As a rule, rough baskets of the usual cylindrical form are utilized for this purpose, the opening being closed by binding its edges tightly together with a pitigua cord. This bottle-shape basket was the only one of its kind encountered, and no Cayapa name was given for it.

BASKETRY HANDLES

285 Most of the ordinary cylindrical baskets of small or medium size, regardless of technic, are provided with handles or bails such as those shown in pl. XCII, 3, and XCIII, 4. These handles are always of pitigua and are made in several forms.

The simplest handle consists of a plain piece of pitigua of the proper length, usually unsplit, tied at diametrically opposite points through the border of the basket. Usually it is passed through and brought up far enough

3: Barrett E-5 (1908-1909)1925
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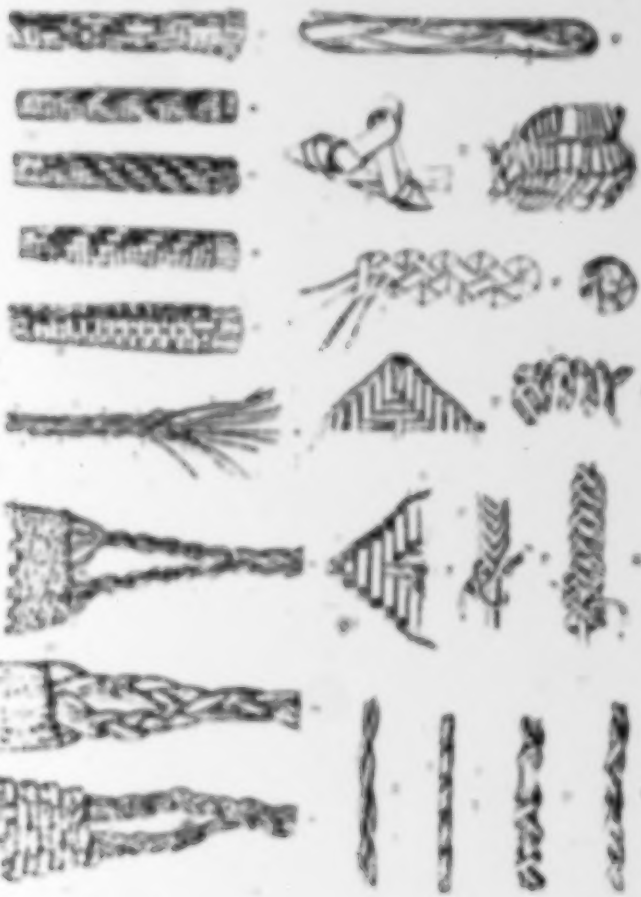

PL. CIII

BARRETT — CAYAPA INDIANS

HANDLES OF BASKETS AND FANS, AND BURDEN-BANDS

[p. 236 (A)]

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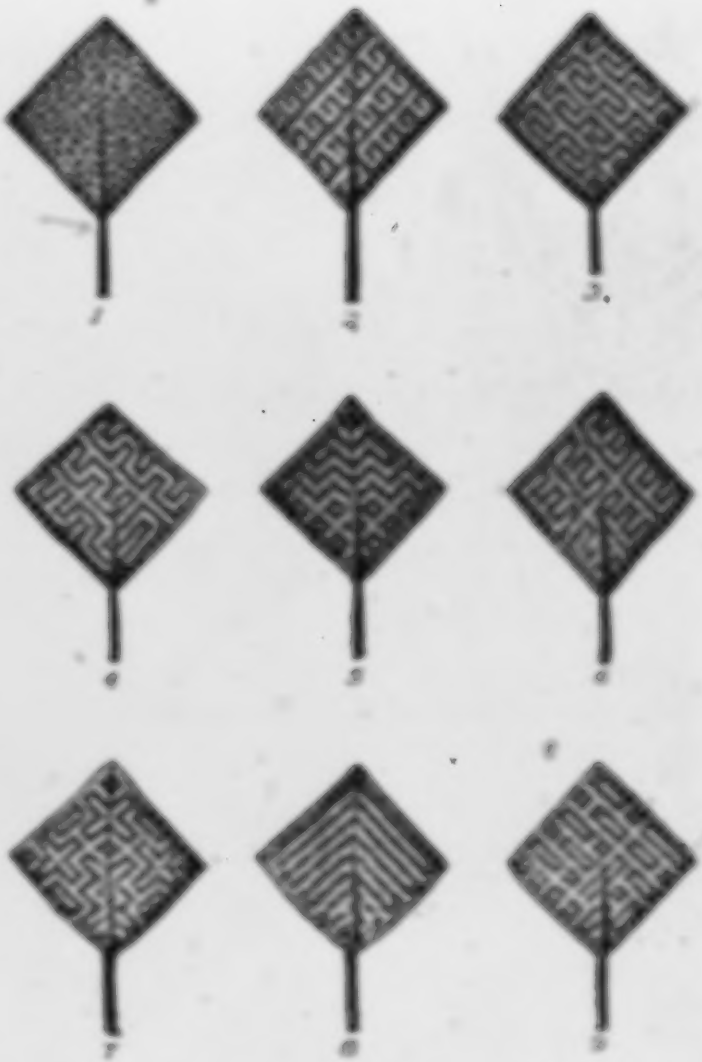

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[p. 234(10)]

3: Barrett E-5 (1908-1909)1925
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to tie in a slip-knot, thus giving it a secure hold. In cases where no considerable weight is to be borne by it, however, it may simply be passed through the sides and knotted at each end.

The construction of five of the more elaborately made types of handle are shown in pl. CXII, 10-13, 19, and 20. In that shown in fig. 10 the construction is simple, an unsplit piece of pitigua being passed through the sides of the basket and twisted about itself after the manner of a two-ply cord, the ends of the pitigua being tied together.

The handle shown in pl. CXII, 11, is similar to the one just described, except that the pitigua is flat, and there is no attempt at twisting; instead, the second element of the handle is simply wrapped round the first. The two handles shown in figs. 12 and 13 of the same plate are similarly constructed save that there are two central elements while the wrapping elements are respectively two and three in number. In all these the sole endeavor appears to be to secure sufficient strength.

In the handle shown in figs. 19 and 20 of the plate, however, there appears to be a definite attempt at ornamentation, since there is added to the central section of the handle, which is otherwise a single unsplit piece of pitigua, an elaborately woven covering, as it may be called. One side of this, usually placed as the upper side, has a herring-bone appearance, as shown in pl. CXII, 19, while the other side appears as in fig. 20. The details of the construction are also well shown in these illustrations and need not be further described.

3: Barrett E-5 (1908-1909)1925
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BURDEN-BANDS

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The burden-bands made by the Cayapa are used almost if not quite exclusively in carrying the two types of burden-basket above described. These bands, called in general ta′ñla, consist in every case of two parts: the broad "head-band," called in Cayapa pickai ka′ñnū, and the two long cords which pass round the basket, called picka′lyi nō tetsūī pañnū. These burden-band cords are made in two technics: a plain braiding (pl. CIII, 1–3), called wa′tse′ta, and an elaborate technic which produces a cord, square in cross-section (pl. CIII, 4), called pī′Xta kalara, or bi′ñda kalara.

The Cayapa recognize four kinds of burden-bands. The simplest of these (pl. CIII, 2) is made of kuna-kuna bark and is called wa′tcī kīka tañla. A strip of this tough fibrous bark, from two to three inches in width and of a length equal to the total length of the burden-band, is selected and its ends are shredded so as to leave an unshredded section of the natural bark about twelve or fifteen inches in length in the middle. This forms the head-band, and at its two ends it is sewed across with a piece of pita string to prevent splitting. The shredded bark immediately adjacent to this section is then divided into two parts, each of which is braided separately for a few inches, after which the two are merged into a single braid which continues on to the end of the cord. These details are all given in the section shown in pl. CIII, 2. The outer surface of this bark is rough, but the inner surface, which is quite smooth and soft, is used as the bearing surface of the band. This particular type of burden-band is sometimes used

3: Barrett E-5 (1908-1909)1925
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upon the forehead, but is more frequently employed as a shoulder burden-band. 285 482

A second type of burden-band is that shown in pl. CIII, 1, which is made of pitigua and is called by the Cayapa te′tsū tañla. In this the head-band is made in wicker with fairly broad strips of pitigua used as warp and a broad strip of the same material passing back and forth as woof. These warp strips are then split and made in two small braids that later merge into one larger braid as is shown in the illustration last mentioned. This type of burden-band is used almost exclusively in connection with the flaring burden-basket, which is supported by the band passing across the forehead. The remaining two types are made of the slender but very strong fibers of the palma real and differ one from the other only in the technic of the cord. In one instance this cord is simply braided, as in the kuna-kuna bark and the pitigua bands just described. A section of one of these bands called in Cayapa nintcū′a tañla, is shown in pl. CIII, 3. The other band, called lū′ra balya tañla, has a cord which is square in cross-section and is produced by the intricate technic shown in fig. 4 of the same plate. The head-band in each case is made in the same wicker technic in which several palma-real cords are laid side by side to form a unit warp element, and a couple of these same palma-real fibers are placed side by side to form a unit woof element.

FANS

The Cayapa make extensively a special type of fan, called nyē′ve or nyiwē′wi, used for fanning the fire and 285 293 372

3: Barrett E-5 (1908-1909)1925
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285 to a certain extent for fanning themselves. As is shown
293 in pl. CIV this fan is always square and has a substantial
372 handle extending from one corner. Almost the only
[824] material used for fans is the bark of the petiole of the fan-leaf palm. On rare occasions the bark of the hoja blanca is employed, and such fans almost always show a pattern in red produced by coloring one set of the twilling elements with achote. Both these materials are prepared in exactly the same manner as in making basketry.

285 The blade of the fan is always made in the over-three and under-three form of twilling, while the handle consists of a bundle of the elements which form the blade, this bundle having an outer surface of twilling or wickerwork, as shown in pl. CIII, 5–9. Such fans are usually eight or nine inches square, though they are sometimes larger and frequently smaller. The larger fans are used almost exclusively for fanning the fire, while the smaller ones are used for giving personal comfort.

285 Fans are decorated with a considerable variety of
531 geometric designs of the same character as those found on mats, and in lesser variety on twilled basketry. Pl. CV shows a number of these patterns, which in most instances are without special name and in no case are they symbolic, as has been pointed out in treating the decorative art of the Cayapa.

285 The exact manipulation of the splints used in fan-making is shown in pl. CIII, 14 and 15, which exhibit respectively the uppermost corner and the right-hand corner of the front or upper surface of the fan. In detail the manipulation is as follows: A single long

3: Barrett E-5 (1908-1909)1925
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strip is bent double, always with its dark surface outward. Between the two splints which result from this doubling and at the point of the bend is passed a transverse splint with its lighter surface uppermost. Next another transverse splint is laid on top of this vertical double one, and the ends of the first transverse splint are bent over the second and passed down close to and parallel with the double vertical splint. In bending these ends from a horizontal to a vertical position they are simply turned over so that the fold in each case forms an angle of forty-five degrees with both its directions and the dark side of the splint is uppermost when the splint is given a vertical position. The third transverse splint is now laid on top of the original double vertical splint and over the two adjacent vertical splints made by bending down the ends of the first transverse splint. Next the ends of the second transverse splint are bent down over this third transverse splint. With this the first unit of three splints is obtained and the uppermost corner of the fan is made. 285

The next set of three transverse splints must now pass below the original double vertical splint. The first of this set passes below this double splint only. The next one passes below the double splint and the splint immediately adjacent on either side, and the third one passes under it and the two splints immediately adjacent on either side. As each succeeding horizontal splint is laid down, it is passed under and over the proper number of vertical splints required to produce the desired design. As each of these splints reaches the edges of the fan, the ends of the splint immediately preceding, which has

3: Barrett E-5 (1908-1909)1925
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285 until now remained horizontal, are bent over as above described, and each of these ends forms another vertical splint passing down parallel to the original double splint used as a base in beginning the fan. Thus, while the transverse splints are all laid down with their white sides uppermost and facing the maker, when they are given this turn and pass downward at right angles to their former direction the dark side is brought into view. Hence all the transverse splints, when the fan is viewed from the side held uppermost in the weaving, are white, and all the vertical splints are dark. Thus, by causing the horizontal splints to pass in each case above or below the required number of vertical splints, the desired pattern is produced. These designs are, as above stated, always geometric, and the direction of their constituent lines is governed by the number of vertical elements crossed by the horizontal elements at the points where such direction changes.

By the addition, as above described, of as many horizontal splints as are desired, the upper half of the fan, which is a complete isosceles triangle the apex of which is a right angle, is formed. All the splints inserted in this upper half of the fan as horizontal elements become, by the above-described bending over, the vertical splints in the lower half of the fan.

When this upper half of the fan is finished, the last horizontal splint laid down is not turned over as in the case of the preceding ones. This splint marks the median line of the fan and is allowed to project horizontally out of its lateral corners until the blade of the fan is completed.

3: Barrett E-5 (1908-1909)1925
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The second or lower half of the blade of the fan is 285 woven in the following manner: The horizontal element next preceding the median element was, like all the remaining horizontal elements in the upper half of the fan, folded over and brought into a vertical position. It is now given a second fold and brought again into a horizontal position. This fold is in the opposite direction to that given it above: that is to say, when a horizontal splint is given its original fold into the vertical position, the splint is folded over toward the operator, which brings the vertical portion of the element on top of the horizontal portion. When it is folded the second time and brought from the vertical again to the horizontal position, it is bent back away from the operator. This returning of the element from a vertical to a horizontal position is illustrated in pl. CIII, 15, which shows the right-hand corner of the blade of a fan. Thus each element which starts in a horizontal position and then becomes vertical in the upper half of the fan, regains its horizontal position in the lower half.

Its manipulation in the lower half of the fan is precisely the same as that in the upper half, and by the selection of the proper numbers of vertical elements over and under which it is to pass, the required design is produced in the lower half just as was done in the upper half. Each end of any given splint is bent over in the above described manner, and the two ends of any certain splint which was originally horizontal in the upper half pass back directly toward each other and together form the horizontal element in the corresponding position in the lower half of the fan. They meet along the vertical

3: Barrett E-5 (1908-1909)1925
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285 middle line of this lower half, the end of each one projecting several inches out of the side of the fan. The end of one half of such a horizontal unit passes out on the front surface of the fan while the end of the other half passes out on the rear surface.

Thus, when the successive vertical elements are turned back into the horizontal position, as above described, and carried through the twilling until they reach the middle line of the lower half of the fan, there is left on each surface of the fan, when this lower triangular half is finished, a set of these projecting ends which is equal in number to that of the original horizontal elements used in making the upper half of the fan, minus one, which is the last horizontal element inserted. This, it will be remembered, was not turned down to form a vertical element as were the others. On each surface these ends project alternately toward the right and toward the left. Those on the front of the fan have their white surfaces uppermost; those on the rear have their dark surfaces uppermost, and it is from these two sets of projecting ends that the handle is woven. In the upper half of the fan, the original double vertical splint is kept as a unit, its two parts passing together above or below the transverse elements as if they were one. On the completion of the first half of the fan, however, these two are divided, one being passed down the front, the other down the back. These two now become the centers upon which the two sides of the handle are woven.

Taking first one side and then the other of the fan, the handle is woven in the following manner (fig. 24):

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The uppermost projecting end of the set of horizontal elements, that is, the one at the geometric center of the fan, is first bent directly back upon itself so that it projects in the same direction as the one immediately below, which in turn is bent back upon itself so that it projects in the opposite direction. As each of these splints is bent over, one of the halves of the original

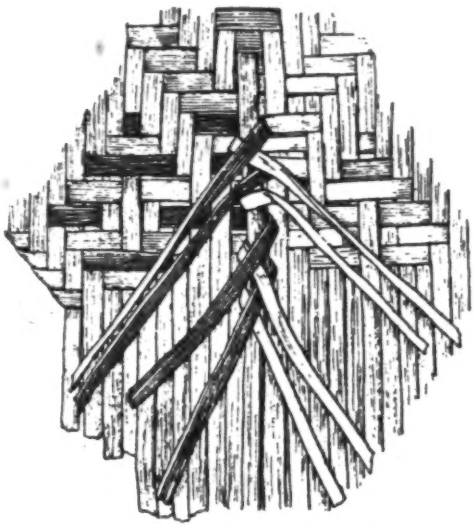

FIG. 24.—Details of fan technic

vertical element is included in the fold. The first end is next bent directly downward in the same manner as were the ends of the splints along the sides of the fan. The third end is then bent over so as to include the single strip of the original vertical element and the end which has just been bent down as above described. The end of the second element is then bent down into a vertical

3: Barrett E-5 (1908-1909)1925
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285 position and the end of the fourth is bent across the three vertical elements of the handle thus far produced. The end of the third horizontal element is now bent down into the vertical position and across the fourth which was bent over as just described. Next the fifth horizontal element is bent across the bundle of vertical elements so far produced, and the fourth is now bent down across this fifth and into the vertical position. This process of bending first one element and then another into the horizontal and later into the vertical positions as above described continues until the lower point of the body of the fan is reached. By this time the ends of all the elements which were formerly projecting horizontally along the middle line of the lower half of the fan are bent into a vertical position and form a large bundle of splints, which constitutes this section of half the handle. These are now tied securely to prevent them from loosening. The fan is then turned over and the other half of the handle is made in the same manner by means of the ends of the horizontal splints which project on the other side of the blade of the fan. Having now completed the weaving, or plaiting, as it may more properly be called, of the two halves of the handle from the center of the blade of the fan down to its lowest point, the stem of the handle, or the part projecting below the lowest point of the blade, is made. Ordinarily the end of one of the last of these elements used in making the portion of the handle above described is wrapped several times tightly around the bundle of vertical splints above mentioned. This is usually an element that projects on the side of the fan which has

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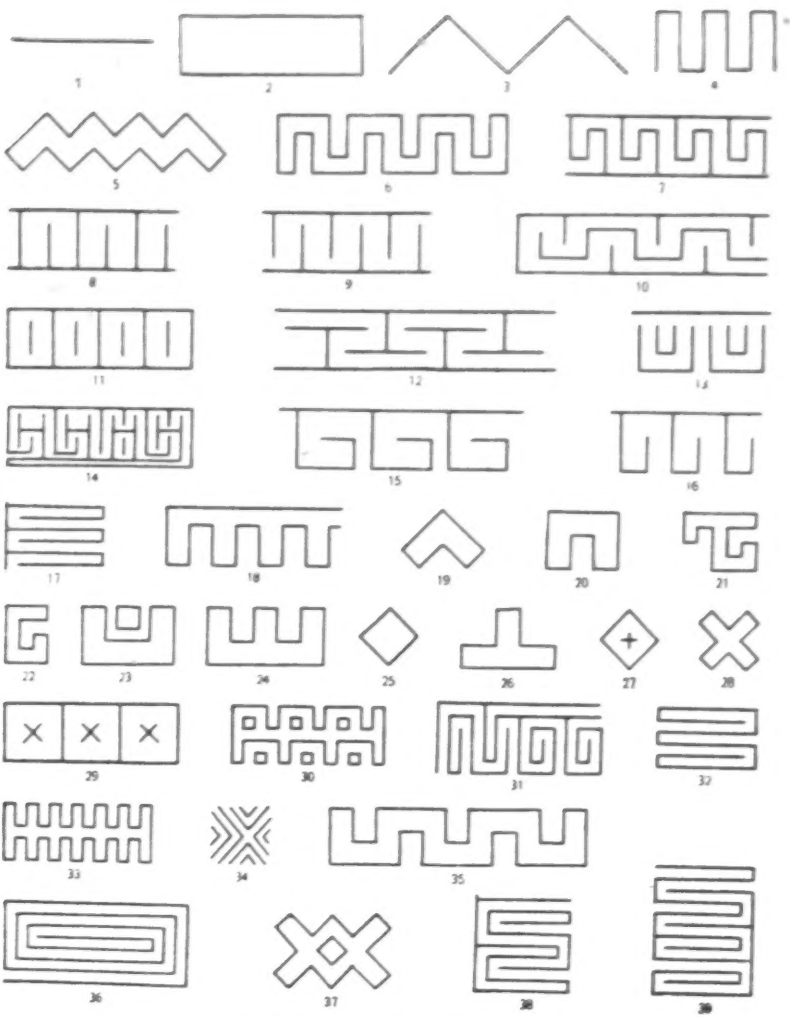

MAT AND FAN DESIGNS

[p. 246 (1)]

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PL. CVI

MATS AND BARK CLOTH

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[p. 246(6)]

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been held uppermost in the weaving of the square blade itself. After this binding certain of the vertical splints are selected and the rest of the surface of the handle is covered by the ordinary twilling process or by wickerwork. In this a single splint is passed spirally round and round the handle, the requisite vertical splints being passed above or below this spiral in order to produce the desired design. In order to hold firmly the weaving at the end of the handle, those vertical splints used as the warp elements in the twilling or wickerwork of the outer surface are bent over and passed up along the surface of the handle. This is done before the handle is completely woven to its end, each of the doubled splints being used as a single element. The last turn of the spiral above mentioned passes through the folds of these vertical splints which are then pulled tightly so as to hold it and the remainder of the weaving firmly in place. This method of finishing the end of the handle by means of bending over the vertical splints is exactly the same as that employed in finishing the borders of all baskets of the wicker technic. Examples of these handles are shown in pl. CIII, 5–9. The last four are finished in twilling, while the first is in the wicker technic.

On completing the blade of the fan, and usually before the handle is woven, the last inserted or medial horizontal splint, which, it will be remembered, was left to project out of the corners of the fan, is turned directly over and passed back along itself. If this splint were simply bent over it would bring its dark surface uppermost and would cover a portion of the white surface of

3: Barrett E-5 (1908-1909)1925
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285 this middle horizontal line. However, a half-twist is given this element so as to bring its light-colored surface uppermost, as is shown in pl. CIII, 15. It is then passed on along itself and follows the same course it did originally, passing under and over the same vertical elements and thus maintaining the symmetry of the pattern. The ends of these returning sections are cut off, so that they are hidden under some of the transverse elements under which they pass and thus the smoothness of the finished surface is not interrupted by the appearance of the ragged ends of these elements.

MATS

Mats, called tya'pū, regardless of size and use, are made of the bark of the petiole of the fan-leaf palm, and are of the ordinary over-three and under-three twilling. [531] Their designs are identical with those found on fans, although they are not so varied as the fan designs.

As is done in beginning a hamper-shape basket (page 202), one of these mats is commenced by laying down two sets of splints and crossing them along a line which gives the desired width of the mat. This line is ordinarily a short distance from what is intended to be one end of the finished mat. A short section of each long splint lies on one side of this line, while the greater part of it extends outward in the opposite direction. After having woven a few courses under and over three, the one end of the mat is finished off. This is done by taking the short ends of the elements and weaving them to the point desired as the edge of the mat, where one set of

3: Barrett E-5 (1908-1909)1925
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the elements is turned at right angles to its former course and passed in and out for a short distance along the same course taken by the other set of elements. This other set simply projects from the edge of the mat and is later cut off. An unfinished mat is shown in pl. CVI, 1. This shows the method of finishing off the first end and also of weaving a section of the body of the mat. Owing to the extreme length of the elements used in this mat it was necessary to coil them up in order to reduce the size of the object for shipment. As the mat is being woven these two sets of elements project out at right angles to each other in the form of a large V. In the case of such a large mat the elements used are often as much as fifteen or sixteen feet in length.

In weaving a mat, half of the elements, that is, all those passing in a given direction, have their light-colored surfaces turned upward; the other half, those passing in the opposite direction, have their dark surfaces upward. Now, in making the edge of the end of a mat, if the elements of the set whose light surfaces are uppermost are chosen as the ones to be turned and passed back as the binding, this turn brings the dark surface of each of these elements upward. These dark surfaces, therefore, superimpose themselves upon the dark surfaces of the elements of the other set along which they lie, since these short ends are passed over three and under three along exactly the same course as that taken by the set of elements which originally ran in the opposite direction. The same pattern is thus maintained. Ordinarily these short ends are run back over two courses of transverse splints, or a distance equal to the width

3: Barrett E-5 (1908-1909)1925
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285 of twelve splints. They are cut off at their point of emergence from under the second transverse course. The splints of the other set, which, in the case above mentioned, are those which have their dark surfaces uppermost, are simply cut off at the edge of the end of the mat. Thus a smooth and solid end is produced.

In most cases the weaving is not carried to its fullest possible extent at the corners, but the elements which project out from each corner are turned back upon themselves and are passed back for the binding of the corner. They pass in the same direction which they originally had in the twilling, but are on the opposite surface of the mat. This gives the mat the appearance of having its corners cut off instead of giving it a sharp right-angled corner such as would be produced if the weaving had been continued to its fullest extent.

Each one of the long elements passes diagonally across the body of the mat and on reaching the edge of its side is folded over and passes back at right angles to its former course. It thus serves as an element of the other color and passes in the direction opposite to that which it had originally. When it reaches the edge of this opposite side it is again folded over. This brings its original color uppermost, and it takes a course parallel to that which it first had and at right angles to its immediately preceding course across the mat. Thus, in a very long mat such an element may go diagonally across three or even four times, as is the case in the large mat shown in pl. CVI, 2. On arriving at the opposite end of the mat, one set of these elements is turned under and passed back to form the edge at this point, and the

3: Barrett E-5 (1908-1909)1925
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ends of all the elements are cut off in the same manner as was done in making the end with which the mat was begun.

Mats of this kind are most frequently used by the Cayapa in the hammocks which serve as cradles. A small mat is placed crosswise in the hammock and holds its edges apart; the baby is then laid upon this mat and swung in the hammock as a cradle. Large mats are occasionally used as beds, but for this purpose bark cloth is preferred. An important use for mats also is as a drying surface upon which to spread cacao. In canoeing, a large mat serves as a canopy or sun covering for small children or for an invalid. If its ends are placed just inside the gunwales of the canoe, bow upward, a mat forms a convenient and very serviceable canopy by virtue of its natural stiffness. An instance of such a use is shown in pl. LXXX.

SPINNING

As was mentioned in speaking of agricultural products, the Cayapa raise considerable quantities of cotton, that is to say, all the cotton needed for weaving the cloth used for their mantas and clouts and for the belts used to hold the mantas in place. No one family raises any considerable number of plants, since a single plant produces almost continuously the year round and aggregates in the course of a year a considerable quantity of bolls. These plants are grown in any convenient place near the house or on the edge of a field of cane or of a grove of chocolate trees.

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which a slight attempt is made to ornament the edge of the shoulder of a vessel with a few incised lines or dots. No names are given to these simple decorations, and no attempt is made to work out any regular patterns even in the rare instances in which they are used.

The designs in hard textiles—twilled baskets, mats, and fans—are purely geometric, fairly simple (as is shown in pl. CV), and few in number. These conditions are quite natural and are imposed by the character of the material and the technic employed. There is comparatively little naming of these designs. Zigzags such as those shown in figs. 3 and 5 of the plate are called dê'tcû, and figures such as are illustrated in figs. 25 and 27 are commonly called kapû'ka, signifying "eye."

Soft Textile Designs

It is in the soft textiles that the greatest variety of both geometric and realistic designs appears and where the only detailed naming of designs occurs. A table of the names of the various manta designs shown in pl. CXXIII-CXXVII, together with a glossary, is given in the following pages. From these data various interesting facts concerning the names of manta designs are apparent.

The names may be classified as: mammals, birds, reptiles, insects, miscellaneous animate objects, parts of animate objects, plants, artificial objects, geometric figures, and untranslatable terms. The following tabulation will show the various numbers in each class.

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Plate	Figure	
CXXVI	42	pala'cia (untranslatable)
		belt (tcū'mbū). (This term in full is tcū'mbū pilya, signifying belt design, and is applicable to all designs appearing on belts)
	43	balya'lyac (untranslatable)
		bū'lara (untranslatable term)
	44	handkerchief design (te'mbū pilya)
		tyūlya'lya (untranslatable)
	45	tyūlya'lya (untranslatable)
		tyū'ndyū tci lara (untranslatable)
	46	canoe design (kūm bi'lya)
		handkerchief design (te'mbū pilya)
	47	handkerchief design (te'mbū pilya)
		te'mbū balyalya (te'mbū signifies handkerchief; balya'lya is untranslatable)
	48	pala'tcū or palū'c lara (untranslatable)
	49	pala'tcū (untranslatable)
		cara (pū'ñge)
		centipede (se'pinde)
	50	No signification obtained
	51	No signification obtained
CXXVII	1	big zigzag (e' dū'tcū)
		e pala'tcū (e signifies big; pala'tcū is untranslatable)
		boa constrictor (we'sū)
	2	e bū'rūlara (e signifies big; bū'rūlara is untranslatable)
		pitigua design (tyūm bi'lya) (tyūm comes from ñi'tcūa, meaning pitigua)
	3	la'ndilas (a certain basketry technic). (This particular basketry technic is a kind of openwork which produces small squares similar to those shown here. It is clearly a case of the adaptation of this technic to this textile)
		bū'rūlara, bū'la (untranslatable)
	4	la'ndilas (a certain basketry technic). See fig. 3 above
		zigzag (dū'tcū). (This interpretation seems doubtful)
	5	bū'rūlara, bū'la, bū'rūla (untranslatable)

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[285]

joint called *guacapa* in Spanish.

Basketry. Fans, baskets, and pouches, are made in the same style and technique as described by Barrett (Barrett 1925:183-250). There is a market for the fans which are used for fanning the embers in the fire-box when preparing a meal. They are often sold in the coastal towns of San Lorenzo and Esmeraldas as well as in the highland town of Ibarra. The money received for these fans is the property of the woman who made the fans, even though they were sold by her husband.

Weapons. The blowgun has disappeared from general use. Only a few specimens are left. All hunting today is done with the *escopeta* or muzzle-loading shotgun. Serving both as a tool and as a weapon is the machete or /machete/, and both men and women are quite adept in its use.

Housing.

Probably the cultural feature of the Pacific lowlands which most quickly attracts the eye of the outsider is the type of house used by the rural Negroid population. This is the square or rectangular pile dwelling with four-shed hipped roof of thatch, a peculiar roof crown, and palm-lath floor